CARANA CORPORATION

Information Technology Enabled Services (ITES) – Bangladesh

ELEMENTS OF A NATIONAL STRATEGY FOR DEVELOPMENT OF AN INFORMATION TECHNOLOGY ENABLED SERVICES SECTOR IN BANGLADESH

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Executive Summary

Information Technology Enabled Services (ITES) is a large, fast-growing worldwide industry fueled by customers seeking efficiency and cost-savings from outside vendors, as well as rapid advancements in telecommunications and information technology. Offshore outsourcing of these services has become accepted and prevalent. Bangladesh has the potential to obtain a share of this market, which could result in a substantial number of jobs and meaningful export diversification for the country.

As a provider of ITES for (principally) overseas customers, Bangladesh meets the minimal requirements in terms of telecommunications infrastructure, labor costs, and government policies. However, there is a great need to focus on creating or promoting factors within Bangladesh that are competitive in the international arena. Other countries are already vying for their share by focusing on reduced costs, increased quality, and meaningful incentives for corporations to award their business to their locations instead of others.

The chief advantage of Bangladesh in this market is low cost labor. However, the high costs of telecommunications clearly constrain the potential and profitability of companies in this sector, which is critically dependent on information transfer. The small domestic market for IT related services also limits training and experience of local workers in order to gain expertise in higher value-added ITES. Lastly, there is the need to build overseas awareness of Bangladesh as a potential ITES provider.

Entering a new market such as ITES is always difficult, even more so with strong competitors from other countries. The Bangladesh IT sector is not currently competitive in the ITES market. Its only clearly identified market advantage is in low cost labor. However, this is balanced against high communications costs. Moreover, low cost is not a sufficient advantage if potential buyers are not confident of the ability of Bangladesh firms to deliver a high quality product.

It is important to recognize that with no fundamental market advantage, firms and the government of Bangladesh must be prepared for a relatively high risk and long term growth strategy. It is high risk because Bangladesh is not likely to be able to seize much of this market without beating competitors who are currently in better position. It is a long term growth strategy because beating those competitors will require steady and constant improvements in the capacity and marketing of Bangladesh firms.

The strategy must also be opportunistic, taking advantage of any openings in the market that present themselves. While there are promising segments in the market, Bangladesh firms must remain flexible in their focus. One of the advantages of a new market entrant is that they can react to market opportunities faster than firms already entrenched in the market. Bangladesh cannot afford to give up this advantage.

Bangladesh firms will also require considerable support from the government, donors, and any other sources available. At a minimum, the government must create a general business environment conducive to this venture into a new market. The government can also be useful in stimulating growth in the capacity of IT firms, and in marketing that capacity internationally.

A reasonable strategy for Bangladesh entry into the ITES market includes a number of components:

- Target segments of the industry where Bangladesh has a comparative advantage, but remain flexible in the search for growth prospects.
- Improve the deficiencies of the Bangladesh IT industry to make it more competitive.
- Market the sector well to overcome the unfamiliarity of the market with Bangladesh products.

Recommendations for the sector involve building the productive capacity of the local IT industry, reducing costs and improving efficiency, creating an environment favorable to entering this sector, and marketing the potential contributions of Bangladesh IT firms.

While the following are covered throughout the report, and listed in Section 5, the chart below details the findings and key actors required to implement beneficial changes.

Improving Productive Capacity

Actions	Participants	Possible Impact
1. **Develop international standards for education in IT**. The customer will look for some international standard by which to evaluate that workforce on external, not internal measures. It is therefore recommended that metrics on the following standards be maintained: ▪ Vendor certifications ▪ Results on internationally recognized exams ▪ Affiliations with internationally recognized Universities ▪ Survey rankings	Ministry of Education, Private sector IT association	It is too early to expect Bangladesh to score well on consultant survey rankings- this should be a mid term goal. Initially Universities and training Institutes must increasingly focus on standards that will be recognized by the international customer. This information will also serve as an element of Bangladesh ICTES marketing.
2. **Support the ICT Task Force** in defining skill deficiencies and supply/demand numbers.	Prof. J.R.Choudhury and his team in defining skill deficiencies and numbers of student enrolment and projection of demand.	Better coordination of the education system and the private sector
3. **Develop programs for informed consumer choice in private training institutes.** It is recommended that a consumer awareness program provide students the information to select a training institute conforming to industry minimum standards. Typically in emerging sectors the 'pioneers' in the sector are followed by numerous other entrants attempting to copy the success of the early entrants. It is in the interest of the industry to define standards for itself that will gain public confidence.	Professional Training Institutes (some of which are ISO9000 certified). While some government control is attempted in various countries, consumer education and definition by industry of minimum standards is most effective in targeting low value vendors.	Institutes not providing value eventually become known to the public or do not gain recognition within the industry.

4. **Create a Training Institution Association.**	Private sector firms. BCS, ISP Association	Associations of member organizations similar to BCS and the ISP association can play a valuable role in creating standards, giving accreditation to its members, helping to upgrade the skill levels of all faculty and creating a consumer awareness criteria for Training Institutes.
5. **Private Sector-Education Dialogue.** Develop a close relationship between the private sector and educational institutions. It is important that the private sector make known its needs for human resources in various skill areas. It will then fall to the training institutes to respond. A close relationship will allow scarce resources to be directed where they are most needed. The rate of change and evolving business needs make it inadvisable for government to prescribe a curriculum of study other than in broad terms. To do so may mean resources are expended in a subject area that is out of date.	A Training Association is in the best position to prepare such a checklist. The experience in other nations is that Government involvement is not as effective. The efforts of the private sector, ISP Association, BCS etc. to make known their requirements is well placed provided educational institutions are in a position to respond.	Typically such consumer awareness programs might provide knowledge of selection criteria such as: - Internationally recognized curriculum - International vendor certification program - Existence of a computer lab - Minimum hours of study - Minimum hours of lab work - Internship programs - List of faculty and their qualifications
6. **Develop domestic capacity through e-government applications:** • Computerize all ministries and GOB departments starting with a pilot ministry such as Commerce and MOSICT. • Use local IT Training institutes. • Post all information and forms on the web. • Introduce interactive applications, such as forms, applications, tender, tax payment and so forth.	GOB Donor support recommended.	Private Sector will be mobilized in ITES. Easier access of GoB information to the public. Enhanced transparency.
7. **Increase funding for technology education** at all levels. A strong base of literate, computer literate students with solid basic skills is the entry point into ICTES training and the workforce. It was found that funding at the University level did not necessarily follow the enrolment numbers.	The private sector can play a role here as in North America where the private sector sees an economic benefit in supporting educational institutions with facilities, work placement opportunities, expertise and advice.	In an environment where rapid expansion is desired it is critical that resources for the educational sector match enrolment targets otherwise already stretched resources are stretched further resulting in a decrease in quality.

Lowering Cost, Improving Efficiency

Actions	Participants	Possible Impact
8. **Allow ITES exporting companies to connect to international telecommunications networks**, allowing immediate access to the affordable, reliable, and available telecommunications service needed for the ITES industry.	BTRC, BTTB	International communications at prevailing world rates.

9. **Allow private sector aggregation of international BW through international gateways.**	BTRC, Private telecommunications firms	More effective use of international communications, lower cost
10. **Provide technical assistance to BTRC**. Projects include development of specific bodies of regulations to cover such things as dispute resolution, radio spectrum allocations, and cost-based tariff evaluations.	BTRC, Donors	More effective operation of the BTRC
11. **Implement sub-marine cable project.** Explore possibility of private sector participation in the project.	BTTB/private sector BTTB, BTRC	Significant increase in BW at lower cost. Facilitates ITES and Bangladesh's entry to ITES segments that require large BW.
12. **Legalize voice over Internet protocol (VOIP)** by private telecommunications providers.	BTTB, BTRC, private sector	Lower cost telecommunications
13. **Support universal application of computerized transactions** in banks and other financial institutions.	Financial institutions, GOB, Donors	Improved international payment systems.
14. **Establish training program for banking professionals** to improve their knowledge of the IT sector.	ITTF, Bangladesh Bank, MOF, Financial institutions	Improved financing of IT sector businesses.
15. **Continue no-VAT, no-tax policy on computer and related products**	ITTF, Ministry of Finance	Improved environment for investment in ITES sector.

Marketing and Business Environment

Actions	Participants	Possible Impact
16. **Develop a strong ITES marketing campaign**, including: • Support IT-firms in their marketing efforts (identification of buyer, selection of market niches, regular participation in software fairs to make presence felt in the international area). • Joint marketing campaign with private sector, including BASIS, BCS and ISP Association and group firms in the same industry/niche. • Private associations conduct market research to continuously stay in touch of the market and feed information to ITES firms and GOB. • Financial support from GOB/donors for implementing sustained marketing efforts by private sector groups in domestic and	IT firms, BASIS, BCS, ISPs and EPB. GOB support. Donor support.	Export enhanced. Sustainable growth ITES sector Bangladesh will gradually be recognized as ITES provider country. Increased employment.

international markets.		
17. **Provide technical assistance to ITES advocacy groups** (ISP associations, computer industry associations, chambers of commerce, etc.) to help them better inform their membership about policy reform, and help stakeholders understand the regulatory process and express arguments to the regulator that are constructive.	Donors, private sector associations	A more business friendly regulatory environment
18. **Link BTRC with regional regulators.** Assure that the BTRC has ample opportunity to benefit from the experiences of regulators in other countries that face similar conditions. Participation in regional and other international forums will be beneficial.	Donors, BTRC	Better consistency with international standards and practices
19. **Provide model legislation and regulatory frameworks to stakeholder groups**. Material should be from other countries, and assist these groups in using these examples to formulate an appropriate policy position tailored to Bangladeshi circumstances.	Donors, private sector associations, BTRC, GOB.	Better IT policy in Bangladesh
20. Internships and work experience programs. Part of the demonstration of a highly skilled ICTES workforce comes from performance on the job. In preparation work experiences as part of the training and education of ICTES professionals should be provided.	Donors, educational institutions, GOB	'Real world' and gains valuable work experience which is a benefit both to the student and to the private sector. Such programs also ensure closer communication between training institutes and the private sector.
21. **Interconnect cell phone system and landline system.**	BTRC, BTTB, cell phone operators, MOPT IT Task Force, MOSICT	Better communications within Bangladesh
22. **Develop a transparent manual based management system with BTRC** so the players in the telecom sector know the rules of BTRC operations.	BTRC, GOB, BTTB, phone companies, business associations.	Better understanding and predictability of BTRC decisions.

Focusing on Growth

Actions	Participants	Possible Impact
23. **Finalize an IT Action Plan (e-plan)** with input from stakeholders and building on past efforts such as USAID/JOBS e-conference, MOSTs IT Action recommendations, etc.	ITTF, MOSICT, FBCCI	A roadmap for development and priority areas identified with participation and ownership of the stakeholders.
24. **Continue the implementations of liberal pro-private sector policies** (tax incentives, IT parks creation, further liberalizing foreign ownership, repatriation of hard currency, etc)	ITTF, Ministry of Finance	Improved environment for foreign and local investment.

encouraging imports of ICT enabling products, exports of ICT products and services, and to attract FDI in IT based on successful world models such as Ireland.		
25. **Legal and regulatory reform**, including: • Promulgate IT Law now under review • Promulgate Cyber and Digital Signature law currently under review • Review other criminal and civil laws to incorporate clauses relating to electronic transactions.	Ministry of Law, MOSICT, IT Task Force, Law Commission Advocacy by BASIS, BCS, ISP Association, Chambers, donors.	Provide strong legal environment to encourage electronic transactions and investment in ITES areas.
26. **Assist the BTRC to be an independent and strong regulatory agency**, including: 1. Separation of the BTRC from MOPT 2. Providing financial power to BTRC to make its own budget and compensation package for staff members 3. Providing training to all levels for effective functioning of the newly formed regulator; 4. Providing opportunities to observe functioning of similar regulators in the region and outside the region; (e) assisting to develop specific bodies of regulations in each areas of its activities,	GOB, MOPT, IT Task Force, MOSICT Donors, business associations as advocate. They should facilitate the process of strengthening BTRC	A fully privatized telecom sector leading to higher investment in telecom sector, and lower communication cost for businesses
27. **Strengthen industry associations and business organizations**, such as FBCCI and DCCI. The associations can lead in enhancing the competitiveness of the Bangladeshi ITES industry. This could be in the form of marketing and promotion exercises, sponsored studies to monitor and benchmark the industry and to lobby with the government for necessary reforms and actions.	IT firms, GOB support. Donor support BCS, BASIS, SIP Association, FBCCI, DCCI	Better public and private sector coordination.
29. **Provide strong thrust to facilitate supportive infrastructure for proliferation of IT** Enabled Services throughout the country, with stress should on developing suitable infrastructure in `non-software' cities. ITES companies set up in EPZ units should claim tax holiday	ITTF, MOF	Attract foreign direct investments (FDI) and expatriate Bangladeshis to channel capital to set up ITES providing firms in the country
30. **Provide GOB Financial support for marketing campaign.**	GOB Donor support	Better funded and more effective marketing campaign.
31. **Promote the use of the ".bd" Internet domain name**. This helps identify Bangladesh as an "IT competent" country and "brand" Bangladesh on the Internet.	GOB, industry association	Visibility and some revenue generation
32. **Enable IT firms to gain access to better lines of credit** (Program like LPG/USAID should be continued). Moveable asset financing for ITES firms.	IT firms, BASIS, BCS, ISPs. GOB support.	Better financing of the ITES sector

	Donor support	
33. **Develop and implement "Bangladesh Ltd."** Campaign in a sustained fashion in collaboration with GOB (MOSICT, Ministry of Commerce, IT Task Force) and business associations. Regularly attend targeted software fairs as a country.	GOB and business associations, NRBs (as appropriate and practical).	Presence of Bangladesh in international ITES market enhanced. Increased export.
34. **Deregulate the landline sector of telecom.** This will allow for increased private investment. 35. **Privatize BTTB**	MOPT, Privatization Commission, Ministry of Finance	Increased connectivity. Low telecom cost. Increased investment and employment in ICT sector.

1. Introduction

Background to the Study

Information Technology Enabled Services (ITES) is a large, fast-growing worldwide industry fueled by customers seeking efficiency and cost-savings from outside vendors, as well as rapid advancements in telecommunications and information technology. Offshore outsourcing of these services has become accepted and prevalent. Bangladesh has the potential to obtain a share of this market, which could result in a substantial number of jobs and meaningful export diversification for the country.

While currently only 10% of outsourced services in the United States are sent overseas, the growth in ITES business process offshore outsourcing (such as financial accounting services, human resources administration, customer care services) ranges from 20% to 30% per year. The Indian NASSCOM McKinsey study provides one estimate of the ITES outsourcing market size, reaching $142 billion by 2008.

Bangladesh would appear to possess many of the same ingredients that have contributed to the success seen in India and other developing countries in the emergence of IT Enabled Services for local consumption and for export. Such services include, but are not limited to, call centers, data processing, medical transcription, back office operations, payroll and HR services, website services and the use of IT for design services for garment manufacture. Bangladesh's authorities are considering how best the government can nurture emergence of an ITES sector. This study is intended to provides information and analysis to support this endeavor.

Bangladesh possesses a growing human resource base in the IT area, and the number of training institutions for the sector has skyrocketed. At the same time, the government has invested in infrastructure to support the sector, and has plans for further investments. The government has also sought to make IT a "thrust sector" by granting tax benefits and preferential access to credit. There is a strong interest in evaluating the package of support the government offers to the sector, to determine if the mix of instruments is appropriate and if it is sufficient to stimulate rapid growth in production and export of ITES. Public discussion is considering the optimal role for government in the sector, as well as the form that sectoral growth should take. For example, some believe Bangladesh's comparative advantage lies in providing skilled IT workers to other countries, while others seek to expand the use of ITES in the local economy. The development of IT enclaves both by the government and private investors is also under consideration.

Study Approach

This study focuses on market potential, rather than the public sector orientation of many studies looking at policy or education systems. As such, it examines the issue from the perspective of the decision makers in this sector: the buyers and sellers of ITES. It examines the market for these products, and the determining factors for a market transaction to take place.

The private sector study focused on a few fundamental issues including:

- What is the market for ITES? Who is producing it, and how? Who are the buyers?
- What is the cost of producing ITES in Bangladesh? What is the cost of inputs? How efficiently can these services be produced in Bangladesh?
- What is the productive capacity for ITES in Bangladesh? What is the capacity of the infrastructure and the quality of the human capital?
- What is the comparative advantage of Bangladesh firms in this market?
- What is a successful business plan for Bangladesh firms to enter this market?

This study is organized accordingly. It reviews the market for ITES, and identifies the comparative advantage of Bangladesh firms. The most critical determinants of success for any firm will be their costs and their ability to produce. Costs and productive capacity are, therefore highlighted in the analysis.

Finally, a business plan is outlined in the study. Because this plan is being developed for the public sector, it is a strategic plan involving the development of an enabling environment by the government and the donors. Nevertheless, the focus of the plan is on how Bangladesh firms can enter and succeed in the market for ITES.

Comparative Advantage

An important concept used in this study is the investigation of the comparative advantage of Bangladesh firms in this market. It rapidly became clear early in this study that Bangladesh firms possess no absolute advantage in this market. That is, they are not the best choice or dominant provider in any market niche of ITES. This was to be expected in a country with such a nascent IT sector.

Not being the best in a particular sector, however, does not eliminate Bangladesh firms as potential competitors. The search for comparative advantage identifies those areas of the ITES sector where Bangladesh firms are relatively better than they are in other areas. It is a measure of what Bangladesh firms are better at doing, compared to other areas of ITES, rather than a comparison of Bangladesh firms to those of other countries.

The significance of comparative advantage is as a guide to areas where Bangladesh firms may want to specialize. As firms in other countries that may have an absolute advantage over Bangladesh firms move toward their own comparative advantage specialties, the Bangladesh firms may be able to fill a market niche.

The study examined the comparative advantage of Bangladesh firms in terms of the requirements for success in these markets. It provides general guidelines on the sectors of the ITES industry that Bangladesh may want to target.

Study Activities

The execution of the study involved detailed research involving two trips to Bangladesh, as well as a visit to the Philippines to examine their recent success in this market. In addition, the study commissioned two opinion surveys: one of Bangladesh firms, government officials, and NGOs, and the second survey of non-resident Bangladeshis.

Among the issues considered by the survey were opinions on:

- The ability of Bangladesh to compete in this market.
- The role that government can play in promoting this sector.
- The role of the private sector in developing this sector as an export market.
- The possible role of Nonresident Bangladeshis in generating business in ITES.
- The status of enabling conditions in Bangladesh and its competitiveness with India.

The survey sample was quite large, and covered several classes of stakeholders in Bangladesh, as well as a group of Nonresident Bangladeshis. The sample size was:

- 42 Government officials
- 194 executives and decision makers in ICT firms and ICT trade associations.
- 27 in NGOs, including business associations, development organizations, social service organizations, and others.
- 204 executives in non ICT firms and trade associations, including banking, legal, health, education, agribusiness, media, insurance, garment and textiles, transportation and others.

Because anecdotal evidence indicates that Non-Resident Indians played a large part in the development of the Indian IT industry, an analysis of Non-Resident Bangladeshis (NRBs) was included in this study. Moreover, the NRBs are considered good information sources for providing another perspective of the external market given their knowledge of the Bangladesh situation and overseas business practices.

To determine the role of NRBs, a survey was conducted online, with requests for participation issued via the Association of American Bangladeshi Architects & Engineers (AABEA), eb2000, TechBangla, and e-Mela. A total of 219 NRBs completed the survey. The majority were based in the United States, in the IT and/or engineering profession, and have spent more than 5 years away from Bangladesh.

2. The Market for IT Enabled Services

Information Technology-Enabled Services, or "ITES", involve business processes and services that extensively utilize components of information communication technology ("ICT"[1]) such as software, hardware and the Internet. As opposed to the manufacturing industry where products are physically visible, the "raw materials" in the ITES industry are data, information and knowledge. The industry is often referred to as a "knowledge-based" industry; as such, the products and services provided are less tangible.

Market Characteristics

India controls 85% or more of the IT offshore outsourcing market, with dominant companies like Tata, Wipro and Infosys.[2] The following are estimates from the McKinsey/NASSCOM analysis of this sector[3]:

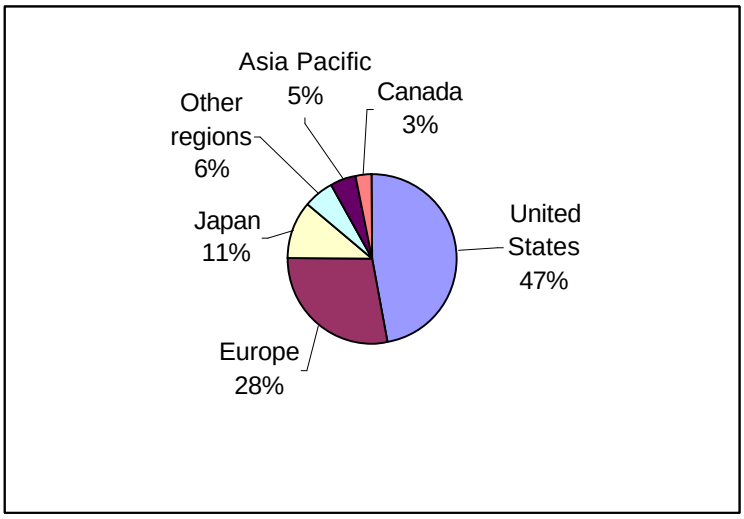
- Global ITES market size of $10 billion in 1998, dominated by customer call centers and animation
- Projected 30% CAGRcumulative annual growth rate], derived from an increase in other types of business processes being outsourced
- Up to $142 billion in ITES outsourcing by 2008

For solely the IT top-level services market (e.g. hardware and software maintenance, consulting and other professional services):

- Revenues reached $609 billion in 1999 and are expected to grow to $1.3 trillion in 2004[4].
- 94% of the worldwide IT top-level services market is produced by the top 20 companies in the industry.
- For this industry sector, which would likely reflect a similar distribution for ITES, the worldwide market is dominated by the United States and Europe:

[1] "ICT", Information & Communications Technology: Electronic means of capturing, storing and communicating information. Modern ICT generally includes telephones, fax, photocopiers, computer hardware and software, and the Internet (e-mail and Web).

[2] Meta Group, "Offshore Outsourcing Fuelled by Budget Pressures," 23 January 2002
[3] "The Indian I.T. Strategy," McKinsey & Company, NASSCOM, December 1999
[4] Gartner Group Dataquest, IT Services Market Statistics, October 2000



Worldwide IT Services Market; Gartner Group Dataquest, 2000

Offshore outsourcing entails business processes delivered from outside the corporation's home country. The industry has been substantially enabled by advancements in global ICT, and corporations' eagerness to find service providers at lower costs. Opportunities for IT-Enabled Services exist throughout a company's business operations, also known as the "value chain":

Process	Potential IT-Enabled Service
Product Development	Market research, data gathering Data mining and analysis Engineering design
Production, Service Delivery	Pre-production; layout and graphic design Data conversion Publishing Records and transcriptions
Distribution, Sales and Marketing	Logistics, inventory tracking Sales support Content, web development Outbound marketing, e.g. telemarketing
Customer Service	Customer care, e.g. call centers Insurance claims Technical support E-mail help
Finance, Accounting and Legal Administration	Data capture, conversion, processing Billing, payables, general ledger Record keeping Transcriptions
Human Resources Administration	Data, forms handling and capture Training, including remote education Payroll processing Employee benefits services

Outsourcing of IT business processes became more realizable with telecommunications costs rapidly decreasing in various areas of the globe, combined with broadened bandwidth to transmit abundant amounts of data. IT-related outsourcing grew specifically from budget constraints and the need to free higher-skilled professionals for strategic projects. The industry grew at a quick pace and to a high level during the Y2K and Euro conversions of the late 1990's, when India became a prominent player and leader in this arena as a low-cost labor provider (of programmers). With experience, acceptance for offshore outsourcing has grown and the types of work being outsourced have become more diverse.

With years of experience in offshore outsourcing, corporations have become more knowledgeable of the pros and cons in sending business processes and IT projects overseas[5]:

Advantages	Disadvantages
▪ Significant savings in labor costs ▪ Time zone differences – increases work hours (shortens production cycle) ▪ Corporate and country culture differences ▪ Qualities of skills ▪ Motivated workers who are career-oriented (lower turnover)	▪ Additional upfront costs because of distance ▪ Time zone differences, can be difficult to manage ▪ Corporate and country culture differences ▪ Communication difficulties ▪ Contract jurisdiction if litigation becomes necessary

While telecommunications infrastructure and low-cost labor have enabled IT and ITES across the globe, the issues surrounding the management of offshore outsourcing relationships remain. Communication and culture differences are unique factors involved in knowledge- based industries, in which the end customer's expectations need to be clearly understood by the vendor. Companies are realizing with experience the importance of selecting the right vendor, of a properly structured contract, and the ongoing management of the outsourcing relationship.[6]

Factor Requirements to be Competitive

Forty-four percent of companies surveyed by The Outsourcing Institute ranked "vendor selection" as the most important element for successful outsourcing. The Institute's IT Index 2001, a survey of participants in IT outsourcing, details the Top Factors in Vendor Selection, in order:

- *Price:* Offshore providers can typically rely on less expensive labor and pass these savings on to their customers. Savings range from 30% to 60% of those in the United States.

- *Commitment to quality:* An outsourcing provider's track record in its industry – backed by measurable results, references and/or international certification – becomes a key factor in

[5] "Offshore is Not Offhand", Kathleen Goolsby, Outsourcing Center, January 2002
[6] Outsourcing Institute IT Index 2001

whether or not it gets the business. To ensure quality, companies have increasingly included and monitored defined service level standards within their contracts.

- *Flexible contract terms:* The processes for outsourcing are typically standard and routine. However, flexible contract terms often work best in the buyer's favor. Vendors might find themselves at a competitive disadvantage if flexibility is not demonstrated.

- *Scope of resources:* Outsourcing firms with breadth of resources in up-to-date technology and supply of skilled labor possess competitive advantages over others. Reinvestment of profits to keep up with current infrastructure and subject matter expertise becomes necessary for outsourcing firms to sustain growth.

- *Additional value-added capability:* The constant advance of technology requires outsourcing firms to expand their capabilities to meet their customers' IT and information management needs. Since customers rely on outsourcers for their subject matter expertise (acquired from the outsourcers' investments in current technology and training), the ability to provide varied levels of capabilities also becomes an outsourcer's strength.

When customers seek ITES offshore outsourcing suppliers, the supplier's country location often does not play a primary role in the customer's choice.

Country-related factors for competitiveness could be viewed as:

Basic Requirements	Positive Factors
▪ Established ICT infrastructure o Specifically, enabled connectivity with the international customer	▪ Low or declining ICT infrastructure costs, e.g. telecommunications costs, consistent with the regional or world market ▪ Reliability, e.g. high to 100% uptime of telecommunications, power supply ▪ Varied choices for connectivity ▪ Fast service delivery from providers ▪ Supporting infrastructure, e.g. transportation, housing complexes, tourist facilities
▪ Supply of workers o Low labor costs o Relevant skills o Training aptitude	▪ Availability and continuity of supply ▪ Subject matter expertise already in place, to reduce training time and costs ▪ Language proficiency in host company's language ▪ Similarity or familiarity with host company's business practices and/or customer expectations ▪ Visible educational support, to ensure supply of workers ▪ Benchmarked competency or proficiency levels, e.g. certifications or international exams and competitions ▪ Reasonable labor union framework

Basic Requirements	Positive Factors
▪ Business environment conducive to international customers o Stable country risk conditions (peace and order, political environment) o For higher end IT and ITES – intellectual property rights protection o Reasonable or competitive costs and ease of doing business	▪ Tax incentives local suppliers of IT and ITES ▪ Simplified customs procedures ▪ Foreign investment privileges ▪ Intellectual property rights protection; anti-piracy laws and enforcement ▪ Presence of successful foreign enterprises and business partnerships ▪ Transparency; low level of corruption ▪ Minimal "red tape" and bureaucracy ▪ Open market policies by the government, visibly being practiced ▪ Favorable living conditions for ex-pats; hospitality for visiting business partners ▪ Legal and regulatory framework with processes that do not pose undue risk for foreign investors

The Philippine Example

The Philippines is a recent entry into the market for ITES. The Philippine Board of Investment estimates that the ITES industry produced $349 million in revenues in 2001 (approx. 1% of exports). Growth is projected to be at 68% annually, to an industry size of $1.65 billion in 2004. This figure amounts to about 18% of what India has projected for its ITES exports of $9 billion in revenues by 2004.[7]

With a number of similarities to Bangladesh, the development of this market in the Philippines can provide a model of how to enter this market. While India has held a commanding lead for years, the Philippines is only now showing its capabilities in various areas of ITES – and has been actively promoting its competitive advantages to the international market. The Philippines also shares with Bangladesh a few less favorable factors – including a poor country image, low GDP per capita, population density and unpredictable political shifts. In NASSCOM/McKinsey's recent ITES study, the Philippines ranked low in both "Country Attractiveness" and "Capability of Workers."

Declining telecommunications costs and the country's inherent strengths in its English-speaking and service-oriented labor force, helped the country to generate business in the American and English-speaking market for outsourcing. Based on an articulated strategy by the IT and E-Commerce Council (ITECC), a partnership organization composed of public and private sector representatives, the Philippines began to focus on its advantages and to target specific ITES segments in which to compete.

In terms of the enabling environment, the public and private sectors of the Philippines have made significant advances in creating a more favorable and optimal location for IT and IT-Enabled Services. These positive effects are becoming more evident, in terms of increased employment

[7] NASSCOM McKinsey

and foreign investment, although the country is still in the early stages of finding its competitive niche in the market.

3. Bangladesh Market Advantages and Disadvantages

Bangladesh firms enter this market at a serious disadvantage over firms from countries already engaged in this industry. The U.S. Trade Center in Dhaka serves as a resource for American companies conducting business (specifically, selling American goods) in Bangladesh, and publishes the Bangladesh Commercial Country Guide[8] for those considering it. The Guide paints an unfavorable general picture of Bangladesh as a country in which to do business. When competing in a global market where there are abundant choices of countries and companies as providers, the lack of awareness and poor opinions regarding Bangladesh are obstacles that require significant effort to overcome.

The market analysis of this study indicated that most companies overseas lack awareness of Bangladesh as an IT services provider. According to Bangladeshi software company representatives who attended the CeBIT telecommunications and IT trade show in Germany, "surprise" is the frequent reaction of customers upon hearing of Bangladesh's efforts to supply IT services. Conversations with IT managers in the United States also reflect this lack of awareness of the country's business capabilities as a whole.

Any analysis of the advantages of Bangladesh firms in this market should consider their position in the basic factors that contribute to success in this market. For this study, these include the costs and efficiency of production, the ability to deliver a high quality product, and the general business environment within which the companies operate. Other market advantages are possible, such as a significant monopoly position in a market, or unique intellectual property that makes firms competitive. However, there appears to be little indication that Bangladesh firms possess such market advantages.

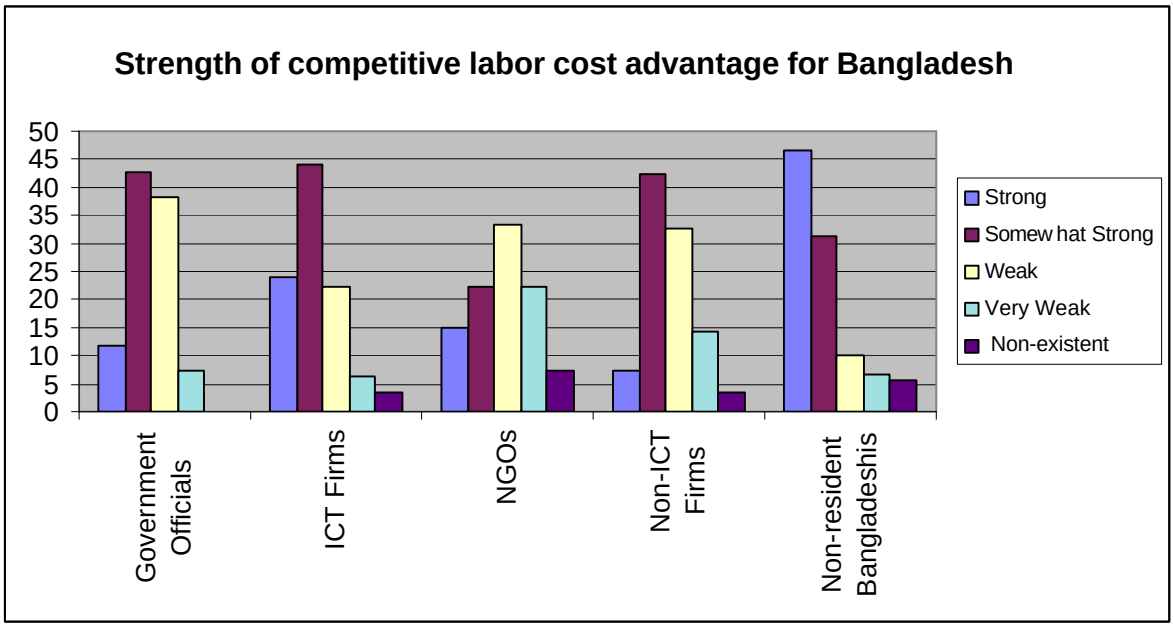
Costs and Efficiency

The ability to operate at low cost is vital for competition in this sector, and is widely perceived as the major advantage that Bangladesh firms have. The major factor in the cost of operation in the ITES sector is labor, and Bangladesh generally has very low labor costs.

Informal information collected during this study indicates that educated computer literate workers for data entry positions would cost about $2,000 per year. University educated computer professionals are available for about $6,000 per year. These salaries are competitive with the other major ITES exporting countries.

In the survey of Bangladesh stakeholders conducted by this study, low labor costs were considered their major advantage over Indian IT firms. The following figure indicates that all segments of the survey felt that Bangladesh labor costs were competitive, particularly among nonresident Bangladeshis and among firms in the ICT field.

[8] U.S. Trade Center, "Bangladesh Country Commercial Guide," 2001-2002



While low labor costs are considered one of the major advantages of Bangladesh, its high cost of communications is considered a problem. Wired telephone service in the country is still being provided by a state owned telephone monopoly, the Bangladesh Telegraph and Telephone Board (BTTB). Cell phone service through four competitors has now exceeded the number of land lines, which are only 500,000 lines for a country of 130 million.

Because of the unreliable and low capacity international service, most international data links are through satellite service, which is much more expensive than undersea cables. As the following table indicates, the cost of data communications in Bangladesh far exceeds that of its potential competitors.

Typical Annual Cost for a 64kbps Business Data Link

Country	Costs
USA	$1,200
India	$5,000
Philippines	$5,900
Pakistan	$8,000
Bangladesh	$12,000

Sources:
http://www.connectbd.com/forms/dsl1.html (Bangladesh 64kbps DSL)
http://www.paknet.com.pk/tariff.htm (ISDN 64kbps)
http://internet.vsnl.net.in/offers/vpn.html (India VPN with 64bps):
http://www.unet.net.ph/rates.html (Philippines leased 64kbps)

Although data transmission by private satellite is permitted, voice transmission is not. This puts Bangladesh at a further disadvantage against potential competitors. In India, starting in April of 2002, international consumer voice communications via the public Internet is legalized, though Internet service providers seeking to offer such a service will need to have their operating

licenses amended. In Bangladesh, the practice of providing voice via the Internet, technically known as Voice over Internet Protocol (VoIP), is reportedly widespread but illegal.

VoIP is prohibited to protect the revenue stream of the national telephone fixed-line monopoly, the BTTB. Surpluses from this revenue stream are reportedly used for a variety of purposes, including reinvestment in telecommunications infrastructure, but also including direct contributions to the national Treasury.

In addition to benefiting ordinary citizens, access to VoIP can greatly reduce the cost of doing business for IT Enabled Services firms who must communicate with their international customers. The experiences of other countries around the world indicate that the increases in revenue through VAT and other taxes on expanding business activities, as well as income taxes on employees, will greatly outweigh the loss in direct revenue from a protected international voice monopoly.

Productive capacity

Bangladesh firms must be able to deliver ITES services in the quality and quantity demanded by the market. As with costs, there are a number of issues involved. The two primary issues are with the quality of labor, and the levels of connectivity with the international market.

Although Bangladesh has a very large population, the supply of skilled labor for the ITES industry is in question. Internationally, Bangladesh compares poorly with its neighbors in education and human capital. In a competitive market the market place seeks to find a demonstration of the skills of the work force. As the degrees offered by one institution may not be comparable to another an external measure is sought by those not in the 'developed nation' category.

Such external measures are:

- Results on internationally recognized examinations (i.e. Japanese IT exam)
- Proven on job experience with graduates
- Success stories
- Certification through internationally recognized programs (i.e. MicroSoft, Oracle certification)
- TOEFL scores for English proficiency
- Credibility (experience and expertise) of Faculty
- Results of consultancy comparative analysis (Gartner Group, PERC)
- Results of 'perception' surveys

Some interesting comparisons illustrate where Bangladesh stands with respect to other nations. The challenges section also shows that its challenges are not unique to Bangladesh. In particular these problems associated with brain drain and recruitment and retention of qualified instructors appear problematic to many developing nations.

a) Education Rankings:

Political and Economic Risk Consultancy (PERC) rankings for Asia: The criteria for this assessment included quality of local education, cost of production labor, availability of production labor, cost and availability of highly qualified staff, proficiency in English, and overall skill of the labor force. Though China and India were not rated high, they both have massive pools of skilled manpower, which have endowed them with potentials of becoming formidable rivals. According to Political and Economic Risk Consultancy (PERC) all the prosperous countries of Asia have heavily invested in education which chiefly accounts for their success.

Note below: Bangladesh does not make even the bottom tier of the rankings throughout Asia.

Country	**Ranking**
South Korea	1
Singapore	2
Japan	3
Taiwan	4
India	5
China	6
Malaysia	7
Hong Kong	8
India	9

b) Literacy Rankings:

Bangladesh is far behind other nations. Literacy is a starting point for the development of the basic skills required just to enter the ITES entry level training.

Country	**Literacy rate**
Bangladesh	51.3%
Philippines	94.8%
China	82.8%
Thailand	95.0%
Malaysia	86.4%

Source: Although several statements of the Bangladesh literacy rate are published, this is the highest figure the author has seen and comes from ITU Asia 2000 conference.

The analysis of existing capacity indicates that basic education (literacy, primary /secondary education) and access to ICT infrastructure are significant barriers to joining the ITES workforce. It is difficult to imagine a skilled ITES workforce without the basic education to utilize ICT and access to the very ICT infrastructure on which those services depend.

Virtually all countries with a strong IS/IT and ITES sectors also have a primary and secondary school education system which recognizes the importance of educational opportunities starting at

the primary level. An analysis of literacy rates, computer literacy rates indicate that Bangladesh faces a significant challenge.

There are 11 Public Universities with an estimated 2001 intake enrolment of 1630 students. This includes National University with 20 colleges and BITs of which there are 4. In addition there are 16 private Universities with an estimated intake enrolment of 2370 students. There are 28 Polytechnic Institutes (both public and private) with enrolment of approximately 1100.

Institution	**2001 Enrolment ***
Public Universities	1630
Private Universities	2370
Polytechnics	1120
Total	5,120

* Source: preliminary draft of the ICT Task Force Report

There also exist a large number of privately run training institutes. An estimated 10K students are enrolled in these institutions. Some are franchise operations with a parent organization in the UK, USA, Canada, India, Australia and elsewhere. These franchisees have access to a curriculum developed and maintained elsewhere. There is little uniformity in standards as the quality of instruction and facilities is unknown.

Institutes not associated with a parent organization provide curriculum developed by themselves. Additionally some institutes provide international vendor certification such as Microsoft, Cisco and Oracle. Such certification requires the passing of an internationally recognized examination and carries a degree of credibility with it. Some institutes offer lower end training in Microsoft Word etc. Training Institutes are the subject of some criticism due to the lack of standards in curriculum, instruction and results.

Bangladesh businesses appear to provide a typical amount of on the job training. The international standard for on the job training for new hires is 3-6 months. In addition virtually all multi-nationals invest significantly in upgrading of skills in a variety of areas for existing employees in order to keep them current. The private sector is well positioned to determine its own needs and provide the necessary on the job training relevant to its own business.

Despite limitations at the primary/secondary education level there still exists a pool of resources trained in ICT related fields. Preliminary estimates from the ICT Task Force indicate that approximately 5000 IT professionals exist in the country. The ICT Task Force points out that most have degrees in fields other than ICT and have taken ICT training through a variety of methods including on the job training. The growth in interest in ICT and indeed the expectations of students that ICT training will produce economic benefits has led to a rise in enrolment in training institutions of all kinds.

Telecommunications

In addition to labor issues, Bangladesh industry suffers from a poor telecommunications system. Access to the Internet, inexpensive international voice communications, and reliable and affordable electricity are an absolute minimum requirement in order to perform ITES services. The quality and cost are inextricably linked to the ability of the country to compete for work in this rapidly growing and fiercely competitive market.

Depending on the type of ITES work being performed the telecommunications needs vary greatly, but what remains consistently necessary is the ability of the workforce to "connect" to the work when, how and where required, meeting deadlines and not failing to deliver. For some ITES product lines, data and voice access through the copper-based local loop may prove important. To download the large data files, local companies must have access to lines of excellent quality and low price. Circuits must be "noise free," i.e. not prone to static when in contact with rainwater or other disturbances due to frayed insulation or poor connections to switching equipment. Switching equipment and routing among telephone exchanges must be clean, in a fashion generally made available through digital equipment. The status of the local loop is dependent upon a capital investment program for regular maintenance and renovation.

The existing national telecommunications infrastructure in Bangladesh is currently only able to support the most rudimentary of ITES services. This would include ITES services most reliant on manual labor, least sensitive to downtime and poor quality, high cost telecommunications. Bangladesh has one of the world's worst teledensities (5 phones per thousand people), and aside from the cellular networks, the national fixed network and all international voice traffic is owned and run by the state monopoly BTTB.

Internet Service Providers play a large role in laying the foundations for a successful environment where ITES services can grow and succeed. ISPs not only provide the "pipes" required to connect the workers to the work, but provide a wide range of associated services which are required to run an efficient and safe network. Network security, backup and restore, design, and hardware and software maintenance and provisioning are all necessary and required services that an ITES company must either manage themselves or outsource.

From interviews and previous reports the following examples illustrate the current situation encountered by an entrepreneur looking to develop an ITES business.

- No fixed telephone lines are available. The national network is completely saturated and no businesses can be attracted to the area if they require fixed telephone service from the national monopoly BTTB. There is no transparency in the ordering and delivery of telephone lines.

- No leased line service is available from the BTTB

- The GSM cellular networks are very competitive and service is of a very high quality. Costs average out to $0.10/minute all over the country and there are four networks to chose from.

- Internet service is currently available from a large number of Internet Service Providers who get the service from satellite providers on the international market and resell this capacity to their customers over telephone lines. A telephone line is required to get service from a Bangladeshi ISP. There are a few ISPs who use wireless radio modems and coaxial cable to deliver their services, but the zones that are covered are restricted to the centers of the capital city and the legality of their service is under question.

- National network services have no quality of service guarantees and there is no recourse or reimbursement in the case of network outages.

- International calling rates to and from Bangladesh are some of the highest in the world.

- Only one monopoly international voice carrier, BTTB.

- Internet service via satellite is expensive in Bangladesh. The main reason for the high price of VSAT Internet is that VSATs are expensive due to the high cost of SAT bandwidth. No "on the ground" aggregator of BW is in the wholesale business so each end-user gets a contract directly with a VSAT company and no “interconnection” or “peering points” currently exist.

General business environment

The environment for doing business in Bangladesh is considered very poor. The policy and regulatory environment is not supportive of such businesses, and the government is often accused to being bureaucratic and corrupt.

The general perception of this environment is reflected in the responses of the non-resident Bangladeshis to the study’s opinion survey. Although familiar with developments in Bangladesh, most are not involved in business dealings there.

	Yes	**No**	**No Reply**
Do you do business in Bangladesh?	20.55%	70.78%	8.68%
Are you familiar with trends in ITES in Bangladesh?	56.16%	35.16%	8.68%
Have you helped develop business ties with the US?	26.03%	65.30%	8.68%

NRBs already doing business with more developed countries (U.S., U.K., Australia, Singapore, Japan) have mostly negative perceptions regarding Bangladesh’s competitiveness. Most common responses outlined the following problems with doing business in Bangladesh:

- Government
    - Rampant corruption and bureaucracy

    - Lack of knowledge, understanding and support for IT
    - Unfriendly business practices, both for entrepreneurs and foreign companies
    - Political instability; intolerance between political parties; hartals or strikes damaging to country's operations and reputation
    - No partnership between public and private sectors
    - No evident influential leader to initiate and support IT efforts
- Infrastructure
    - Costly and inadequate telecommunications
    - Power supply not reliable
- Human resources
    - Can't meet quality standards of the developing world
    - Poor or declining English capabilities
    - Lack of understanding of IT benefits, so hesitation to implement IT programs in business
    - Lack of commitment; lack of knowledge of western business practices
- Financial systems
    - Not developed to support IT projects
    - Lack of foreign investment
- Poor country image
    - Known as disaster area, low value-added exports (e.g., garments)
    - Lack of marketing, awareness
    - Lack of knowledge of overseas customer expectations

NRBs also do business in several other countries, including the United States and Canada; United Kingdom and Europe; Australia, Japan, China, Thailand, Malaysia and Singapore; Kuwait, Saudi Arabia; India and Pakistan. In making international comparisons, the NRBs were quite harsh:

- "No comparison; can't compare" – Bangladesh is "100 years behind"
- Infrastructure, especially for the internet, is superior overseas
- Business practices – high productivity; market-driven and profit-oriented policies and practices in other countries vis-à-vis Bangladesh
- Little bureaucracy and red tape; government is pro-business and promotes entrepreneurship

However, those that work in south Asia, Africa and the Middle East stated that Bangladesh demonstrates similar technologies and business practices to these areas – with the exception of India.

Public policy plays a major role in the development of a good business environment. The government has recently taken several steps to improve this situation. Recent work on an IT action plan was a positive step, and the government has promulgated a number of progressive polity statements. In addition, several positive steps have been taken, including:

- The elimination of duty on hardware and software means that the Government is treating these goods as investment inputs.

- A business-tax holiday for all firms, including those investing in new ventures in the IT-enabled services sector, starting from the date of commercial production, is a significant encouragement to investment. Leading competitors of Bangladesh, including India and the Philippines, offer similar incentives to their firms.

- In a highly unusual move, the Government has greatly liberalized international access to telecommunications services. Licenses for Very Small Aperture Terminal (VSAT) satellite systems have been granted to a large number of firms in Bangladesh, in particular to Internet Service Providers (ISPs).

- In yet another unusual move, the Government has permitted ISPs to bypass the copper-based telephonic local loop through the use of specialized radio equipment (see http://www.breezecom.com for a typical equipment vendor).

- Numerous licenses have been granted to cellular telephone operators, representing direct competition with the Government's own copper-based voice telecommunications system.

These and other positive developments represent movement in the right direction for the IT-enabled services sector. Nevertheless, a number of important policy hurdles remain. For the IT-enabled services sector, some more than others are critical to success.

Nevertheless, the non-resident Bangladeshis were critical of the government involvement in this sector. In addition to the list below, many respondents added that the government "should stay out of the way of businesses and entrepreneurs" – i.e., once the infrastructure and logistics are resolved by the government, market forces should be allowed to take over unobstructed.

- Infrastructure, logistics
    - Dismantle BTTB
    - Truly liberalize telecommunications – implement an independent regulatory commission
- General business climate
    - Promote political stability, peace and order
    - Adopt business-friendly policies that promote foreign direct investment
    - Increase transparency; reduce corruption
    - Offer tax breaks and incentives for local businesses, foreign investors
    - Implement IPR policies
- Marketing
    - Establish U.S. trade promotion office, in conjunction with IT trade associations
- E-governance
    - Implement IT projects with preference to local IT firms

4. A Bangladesh ITES strategy

Entering a new market such as ITES is always difficult, even more so with strong competitors from other countries. The Bangladesh IT sector is not currently competitive in the global ITES market. Its only clearly identified market advantage is in low cost labor. However, this is balanced against high communications costs. Moreover, low cost is not a sufficient advantage if potential buyers are not confident of the ability of Bangladesh firms to deliver a high quality product.

It is important to recognize that with no fundamental market advantage, firms and the government of Bangladesh must be prepared for a relatively high risk and long-term growth strategy. It is high risk because Bangladesh is not likely to be able to seize much of this market without beating competitors who are currently in better position. It is a long-term growth strategy because beating those competitors will require steady and constant improvements in the capacity and marketing of Bangladesh firms.

The strategy must also be opportunistic, taking advantage of any openings in the market that present themselves. While there are promising segments in the market, Bangladesh firms must remain flexible in their focus. One of the advantages of a new market entrant is that they can react to market opportunities faster than firms already entrenched in the market. Bangladesh cannot afford to give up this advantage.

Bangladesh firms will also require considerable support from the government, donors, and any other sources available. At a minimum, the government must create a general business environment conducive to this venture into a new market. The government can also be useful in stimulating growth in the capacity of IT firms, and in marketing that capacity internationally.

A reasonable strategy for Bangladesh entry into the ITES market includes a number of components:

- Target segments of the industry where Bangladesh has a comparative advantage, but remain flexible in the search for growth prospects.
- Improve the deficiencies of the Bangladesh IT industry to make it more competitive.
- Market the sector well to overcome the unfamiliarity of the market with Bangladesh products.

Each of these components is discussed in detail below.

The Philippines provides an example of a coordinated public and private strategy that is beginning to yield some success. While the Philippines appears to be gaining momentum in strengthening its competitive position as a supplier of ITES, the country is still developing this industry and its export potential. Strategic actions that have proved useful include:

Action: Liberalize telecommunications industry
Results: Lowered costs, enabled IT industry; increased company competitiveness; increased foreign investment

Action: Focus on unique competitive advantages
Results: Differentiation from other competitor countries

Action: Government provides institutional support
Results: Open market policies encourage foreign investment; marketing the country as government's role

Action: Public and private sector partnership
Results: Aligned objectives and tactics; united message to market the Country

While still behind and lesser-known than India, the Philippines offers several possible best practices to Bangladesh with its efforts to formulate, articulate and implement its strategies for becoming a "Supplier Country of Choice".

Potential ITES Market Segments

The ITES market consists of a large number of segments, each with their own requirements. Some high-end segments, such as programming and web design, require special skills that are in short supply in Bangladesh. Other segments, including call centers and technical support, require real-time communications, which would be problematical with the current infrastructure of Bangladesh.

Bangladesh has the greatest opportunities under current conditions in market segments requiring low cost workers with only general computer skills, and without a requirement for real-time communications. This does place significant restrictions on areas of focus. In the opinion survey, many of the NRBs suggested segments for Bangladesh to target. However, they also admitted a lack of knowledge in this area:

- Software development
  - Quality assurance
  - Smaller-scale applications or software modules
  - Projects must be well-documented for offshore development
- Data entry
  - Documentation data entry
  - Back office processing
  - Bill preparation, accounting
- Digitizing and conversion
  - CAD CAM, assisted conversion
  - Blueprints
  - GIS
- Web development

- Database management
- Transcriptions
- Call centers, specifically for IT-related, hardware or technical support

This study also did an extensive review of several promising segments of the market. An analysis of these segments is included in the annexes to this report. A summary of these analyses is included in the following table.

It seems clear that the Bangladesh IT sector will have to start with the lower end market segments that make best use of their advantage in low cost labor. However, this generalization can hide a wide variety of market efforts from individual firms. The study revealed several Bangladesh firms involved in international markets in software development, graphics, medical transcription, and other areas.

As each firm develops its own comparative advantages, the country's ITES strategy should be receptive to emerging opportunities. Accordingly, the strategy should not adopt provisions that are specific to a particular market segment. For example, public assistance with training or marketing should not focus on specific areas such as transcriptions or animation. Rather, public support should be forthcoming for any market segment in which a firm can demonstrate a market opportunity.

Competitive Position of Bangladesh in ITES Segments

Segment	Bangladesh Potential	Enabling Factors	Limiting Factors
Data Processing	**Medium**	Abundant supply of lower-skilled, production-oriented workers; short training time; Large overseas market with high growth rates	Telecomm infrastructure – low margins require low operating costs; industry moving towards images not paper – demands on bandwidth becoming higher; Crowded industry becoming very competitive; Quality practices will need to be learned
Data Digitization, Conversion	**Medium**	Same as above	Same as above
Medical Transcriptions	**Low**	Available supply of workers proficient in written English; relatively lower cost of labor	Supply of workers with English proficiency lower relative to competitor countries; these workers command a premium, and would likely work elsewhere; long training time increases initial investment; No viable supply of workers knowledgeable in medical-related fields; lack of marketing overseas
Animation & Multi-Media	**Low to Medium**	Supply of art graduates; low relative labor cost; Short training time, minimal investment in equipment for 2D	Competitive market – other countries have strong head start Lack of domestic exposure to overseas entertainment limits creativity
Geographic Information Systems	**Medium**	Large, emerging international market with few competitors; many linkages already made with US prospective customers; Supply of engineering, math and science graduates; Opportunities for GIS experience with donor community, universities and government	Small domestic market limits training and experience; Equipment and software costly; Telecomm infrastructure – will require abundant bandwidth for the international market Quality practices will need to be learned
Software Development	**Low to Medium**	Supply of computer science graduates; Opportunities exist in niche markets (e.g. Germany, Scandinavian countries), lower-end development for less complex solutions	Small domestic market greatly limits experience and expertise to develop larger-scale projects and higher value-added software services; lack of exposure to overseas business practices and processes; Telecomm infrastructure costly which diminishes labor cost advantages

Building Productive Capacity

A useful strategy for building the productive capacity of Bangladesh would have two main goals: increase the supply of skilled labor and improve the communications system.

Skilled Labor

This study examined the levels of labor supply among several classes of skills. While current supply is not severely constrained, shortages of skilled labor could be a significant bottleneck to growth. Low skilled, computer literate workers can be trained relatively quickly, but higher-level skilled workers will require longer range planning and investment.

Human Resources skill level	**Current capacity**	**Future Capacity (assuming export targets reached)**
High end (systems analysts, software architects, project managers etc.)	Minor shortfall	Major shortfall - Action required
Middle tier (s/w programmers, specialized animation and CAD applications)	Adequate	Adequate Capacity – increase in line with demand
Low end (data transcription, data entry, low end animation)	Minor shortfall	Can be ramped up with minimal effort

The ICT Task force is recommending an increase in enrolment rates. Additionally they have rightly attempted to categorize the skill level and quantities required given an assumed target level of ICTES export. It has also been identified by the private sector that there are insufficient resources in some skill areas (high end) i.e. project management, systems architects, software testers. The education system struggles to upgrade computer skills but is challenged by the lack of qualified staff, adequate facilities and low funding.

Meanwhile, the private sector reports that there are many more qualified applicants than jobs. A typical response rate is 100 applicants with perhaps 10-15 fully qualified for each position. This situation will persist until there is economic growth in the sector.

Bangladesh has significant challenges in developing a competitive ITES workforce but it also is making some significant steps in the right direction

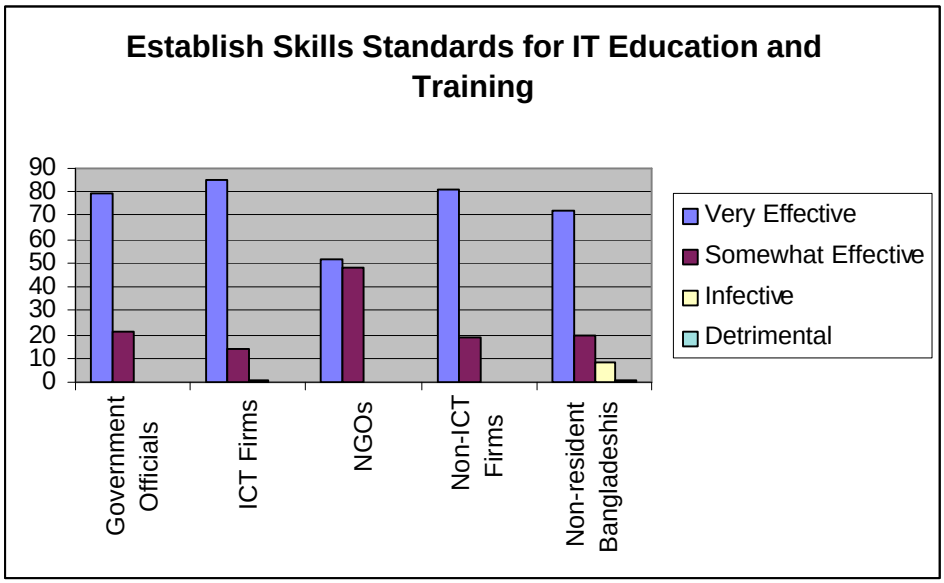
- ICT task force in conjunction with private sector defining skill sets required, enrolment numbers and projected demand in conjunction
- Private sector making recommendations on required curriculum
- Some minimal internships / co-operative education opportunities supported by private sector
- Move by some training institutions to offer international vendor certification courses

- Some franchise training institutes providing internationally recognized curriculum, some ISO9000 certified (caveat concerning quality of instructors)
- Private sector providing on the job training (OJT) in line with their needs
- TechBangla facilitating NRB train the trainer sessions

A number of issues still remain in the education sector. A major goal is to develop standards and certification that verify the skills of Bangladesh workers. A comparison of international standards used in the Philippines versus that of Bangladesh is as follows:

Int'l Standard	**Bangladesh**	**Philippines**
Vendor certification (Cisco, Microsoft, Oracle etc.)	Yes	Yes
International examinations (Japanese IT/Animation; Singapore Proj. Mgmt.)	No	Yes
Included in Consultant rankings (PERC, META group, Gartner Group etc.)	No	Yes
Included in expat perception rankings	No	Yes
University curriculum comparisons with N. America	Yes	Yes
Examination benchmarking with N. American	No	Yes
Internships/co-op programs	Some	Some

This study's opinion survey showed strong support for the establishment of skill standards for IT education. The need for better standardization of skills in the industry was a common theme throughout the survey.



Other components of labor force improvement include:

- While some private sector/educational institution partnerships involving work placements were found, more emphasis in this area is needed to produce a fully qualified workforce.
- No training and educational professional organization or association exists. Such an Association could provide some self-regulating standards, advice for consumers, or public awareness campaigns.
- Many ICT training organizations are using curriculum developed elsewhere (India, USA, UK) thus providing some measure of international credibility. The quality of the instructors and the instruction remain uncertain.
- A number of organizations provide training as part of their business – a high degree of vertical integration because the level of business is small. This requires firms to have a scattered focus. It is often the norm in an evolving sector that there are many entrants offering a variety of services. As the sector matures, typically organizations consolidate and businesses focus on their core competency and niche market. This helps increase both quality and efficiency. Bangladesh is still at the early stages of sector development.
- The efforts of the IT task force to estimate HR capacity versus demand by job category is commendable. Such an analysis is critical, and the views and input of the private sector need to be referenced on an ongoing basis as demands shift. While the targeted demand is only an estimate (goal) it is never the less important to make such HR demand estimates versus various target levels.

In addition, there is poor information flow to consumers within the education system. There is a gap evident in the expectations of those entering ICT training institutions and the reality of the job market. One ICT training organization reported a job placement rate of only 1 in 6. Students surveyed overwhelmingly suggested their motivation was to get employment abroad. Moreover, firms considering institution graduates for employment are unsure of the quality of education received by the applicants.

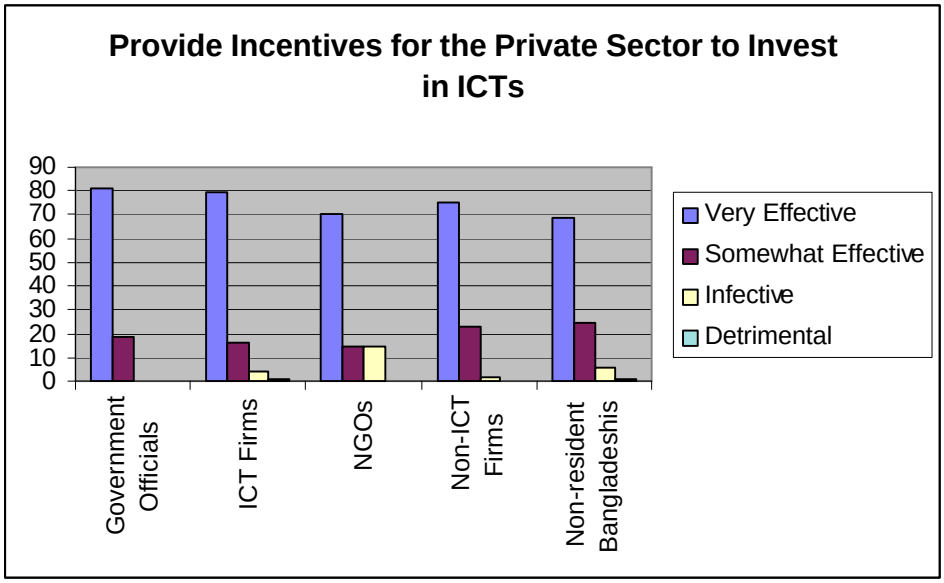
The issue of consumer protection for the multitude of training institutes is continually raised by a variety of stakeholders. Certification of the quality of education and training would be a major function for a professional training association. In the long run, this independent measure of school quality, even if on a voluntary basis, would allow market forces to distinguish the good performers from the poor performers.

Improved Communications Infrastructure

This market requires good communications to function properly. Any Bangladesh ITES strategy must include measures to improve communications.

An important result highlighted in the study survey was that almost all the groups believed that encouraging investment in information and communication technology was a very effective method of developing this market. This highlights a general opinion among the sample that

Bangladesh is disadvantaged in this sector by the lack of a good communications technology infrastructure.



An appropriate vehicle for improving the communications system, and for encouraging private investment in it, is the Bangladesh Telecommunication Regulatory Commission (BTRC), which became operational early in 2002 subsequent to the Bangladesh Telecommunications Act gazetted in 2001.

The BTRC is mandated to promote competition (Paragraph 30 of the Act) offer choices and lower prices to consumers as well as to businesses that use telecommunications infrastructure as a critical input to their products. In order to carry out this mandate, the BTRC is granted a number or particularly important authorities:

- The BTRC is charged with eliminating the cross-subsidization of competitive services from the revenues gained through the provision of monopoly services, such as voice loop revenues to subsidize an Internet services operation.

- The BTRC has the authority to approve tariffs.

- The BTRC can mandate interconnections among the providers of voice and data telephony.

- The BTRC is the sole licensing authority for all telecommunications services, including those accomplished via wireless technologies.

The BTRC can take steps to remedy market failure. The Government of Bangladesh had proposed to maintain its monopoly over copper-based voice telephony in the local loop until the

year 2010. However, there have been some very recent signs that liberalization may occur sooner rather than later.[9]

One possible approach to overall telecom liberalization would begin with the establishment of a national telephone company out of the current BTTB, operating as a commercial monopoly enterprise wholly owned by the Government. This would be followed by a gradual selling of shares in this new company, first to strategic telecommunications partners and then to the public. This privatized monopoly would then face eventual competition, perhaps by 2010 as currently planned. These steps would be in line with those taken by many other countries, including Pakistan, where one local expert noted that teledensity once equal to that in Bangladesh is now some 10 times better. The aim of the strategy would in part be to secure a large initial payment to the national treasury, followed by a liberalized private market for telecommunications services, hopefully offering better service than the incumbent.

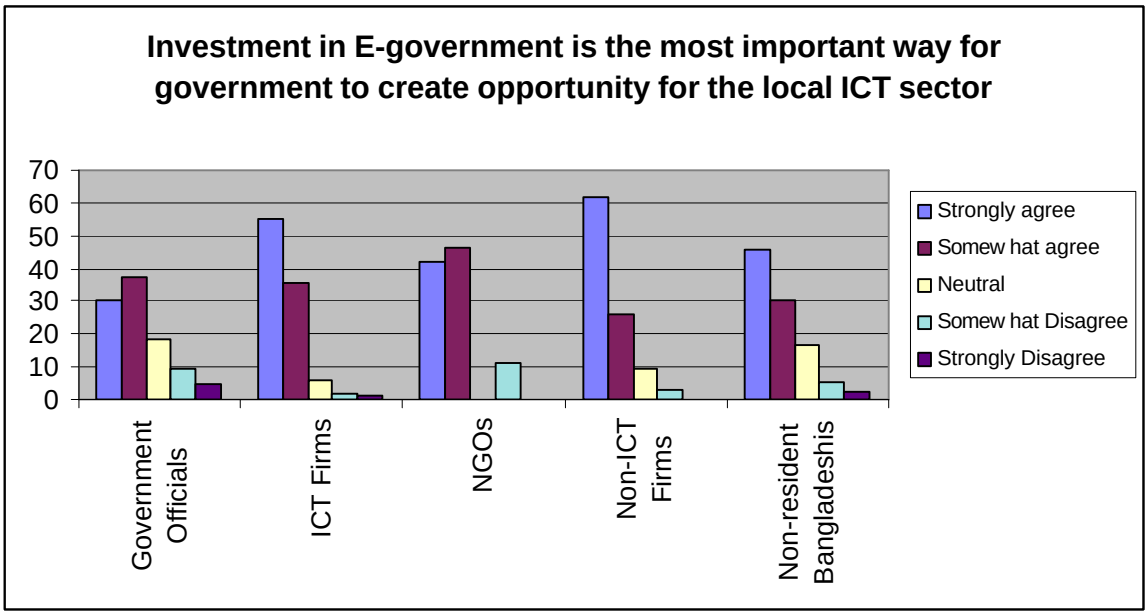
There are alternatives to the conventional strategy. Countries like El Salvador have experimented with immediate liberalization – the immediate elimination of monopolies and the implementation of antitrust regulations, including the breakup of existing monopolies. The sale of a national telephone companies without the assurance of monopoly protection might not result in as high an immediate return to the national treasury, and for that reason might be politically more difficult to accomplish. However, from a market development perspective, this alternative strategy rightly focuses on the problem of liberalization rather than privatization as the key to strong market growth with lower consumer prices.

Building Domestic Capacity

In addition to improving labor and communications capacity, the government can also promote the use of IT within the country as a way of building the domestic capacity of the IT sector. One of the most direct ways in which it can do this is to invest in developing e-government capacities, particularly if it contracts with the local private sector to deliver this product.

There was significant support for this activity among the survey. It is noteworthy that the least support for e-government came from the government officials, who presumably would be required to manage its creation.

[9] According to a recent press release on an August 8 meeting of the ICT Task Force, the Task Force has directed BTRC to: a) formulate uniform guidelines for mobile phones by October; b) invite expressions of interest from more private cell phone operators by November; c) legalize VOIP by January 2003; and d) open the fixed phone line market to private operators by April 2003.



Lowering Costs

While high costs is not a major issue with the Bangladesh IT sector, it does have a significant problem with international communications. An expectation among many in Bangladesh is that access to the world's major trunk fiber network via an undersea cable will transform the telecommunications market in Bangladesh, greatly reducing costs.

The Government of Bangladesh has decided to procure this cable through its own telecommunications operator, the BTTB. According to plan, the approval of financing, the survey of the cable route, and the manufacture, installation, and testing of the system may be expected to by the fourth quarter of 2003 or the first quarter of 2004.

Possible impacts on the information and communications technology industry of Bangladesh include:

- Significant reduction in telecommunications charges compared to the current costs for international VSAT links (perhaps as great as 50 per cent)
- Low cost, reliable data transfer for software exporters, call centers, banks, multinational corporations, foreign organizations, Internet service providers, and non-governmental organizations
- Enhanced access to the global Internet
- Higher usage levels as a result of higher data transfer speeds, e.g. to 64, 144, or 384 kilobits per second for typical subscription rates

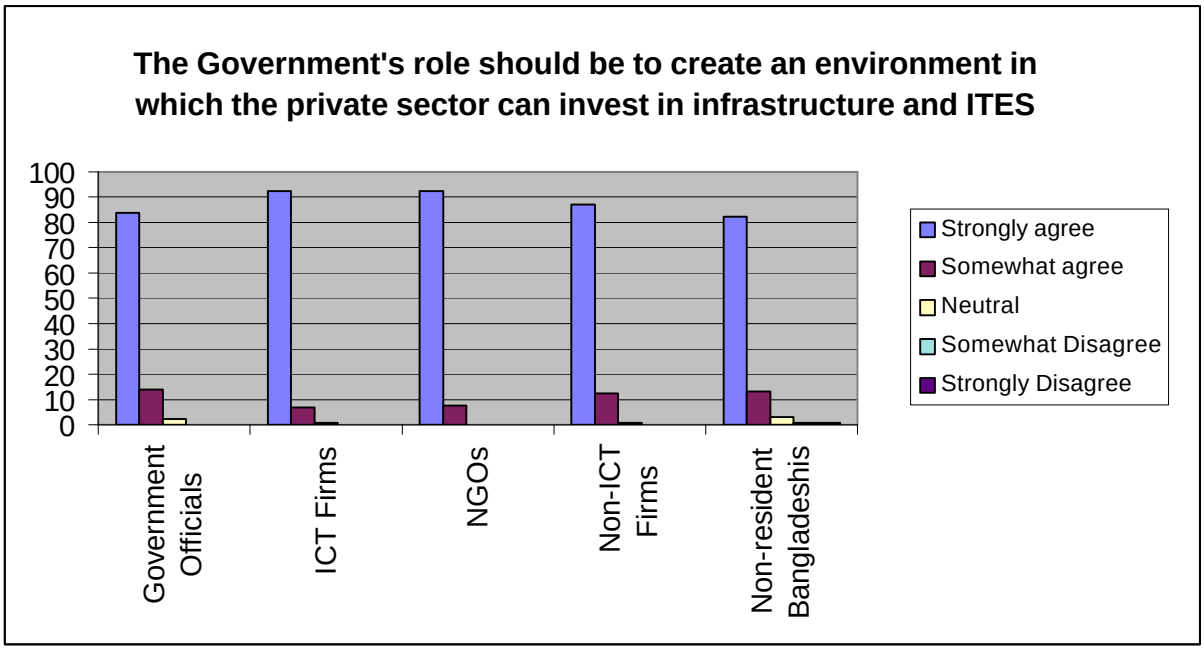
An appropriate analysis of the probable impacts of a connection to such an international telecommunications backbone would entail a look first at the costs to the Government of securing a connection, and then at the various successful pricing policies that have been

implemented by countries in similar circumstances around the world. Will the Government of Bangladesh set prices based on a maximum short-term recovery of investment costs, or will it favor a longer-term recovery of costs in order to encourage rapid economic growth?

In either case, how will the local business community perceive these prices and the quality of service with respect to available alternatives? One knowledgeable local observer suggested that VSAT satellite data links might very well prove to be a robust option even in the presence of a connection to an undersea backbone. From a policy perspective, how Government decides to price access to this new resource will be critical. Availability of the resource is about two years away.

Building a Competitive Environment

Virtually all stakeholders felt that the government should play a major role in the development of an ITES sector. That role, almost unanimously, was felt to be the creation of an environment in which the private sector can invest in the infrastructure needed to develop the sector.



The experience of the Philippines in developing a public and private partnership for IT provides an example of the way in which a competitive environment can be promoted. In that country, stakeholders created the IT E-Commerce Council (ITECC). The organization combines the political muscle of government officials, with the expertise of the private sector. It should be noted, however, that (from interviews with stakeholders) there was wide agreement that the government was slow to react at first in focusing on the potential of IT and ITES. It was due to repeated requests from private sector IT organizations that finally gained the attention of

government officials who eventually provided the political determination to get organized and formulate a strategic approach.

The ITECC falls under the Department of Trade and Industry, and is headed by an Executive Director who holds a Cabinet-level post under the President. The Committee is headed by the President Gloria Macapagal-Arroyo, who has been credited for her focus on the economy (she was an economist and former member of Congress). ITECC members report that she indeed chairs the committee's monthly (now quarterly) meetings, driving the agenda with her political promise to create over 100,000 high-value jobs by the end of 2002.[10]

The Executive Committee under the President is composed of the Secretaries of the Department of Trade & Industry (DTI) and the Department of Science & Technology (DST), plus the Executive Director. The Executive Committee is tasked with policy-making and planning for the rest of ITECC.

There are many working sub-committees, including Infrastructure, Human Resources, Business Development, e-Government, and Marketing and Communications. The sub-committees are each co-chaired with a government official and a volunteer member of the private sector. The Business Development Committee, for example, is co-chaired by the Undersecretary of the DTI and the Chief Information Officer of one of the largest Filipino-owned conglomerates in the country. The Human Resources Committee is co-chaired by the Department Chairman for Computer Science in the University of the Philippines school system and the founder of one of the largest chain of computer training schools. This arrangement, demonstrating a public and private sector partnership, appears to be working well for the ITECC in terms of aligning the goals of the public and private sectors organizationally.

The ITECC wrote the "Internet Strategy of the Philippines" or ISP.com that outlines the general issues concerning the committee for promoting the IT and ITES industries in the country. As written on the Board of Investments website, the committee set out to develop focused market plan where Filipinos "can compete initially and immediately" in the ITES industry, specifically by maximizing inherent advantages of human resources.

In principle, the ITECC believes that the government's role is to provide support in infrastructure, labor, financial, logistical and legal/institutional means. However, development of the sector should be left to the private sector – that technology and markets are "inherently ungovernable" and best if "left to do its thing".

There are several notable government incentives that have facilitated the growth of local companies and foreign investment in the ITES industry:

- Philippine Export Processing Zones (PEZA) – IT Parks in the country are typically owned and operated by the private sector
- Tax Holidays for 4 to 8 years
- Tax and duty free importation of machinery, equipment
- Simplified flow of goods

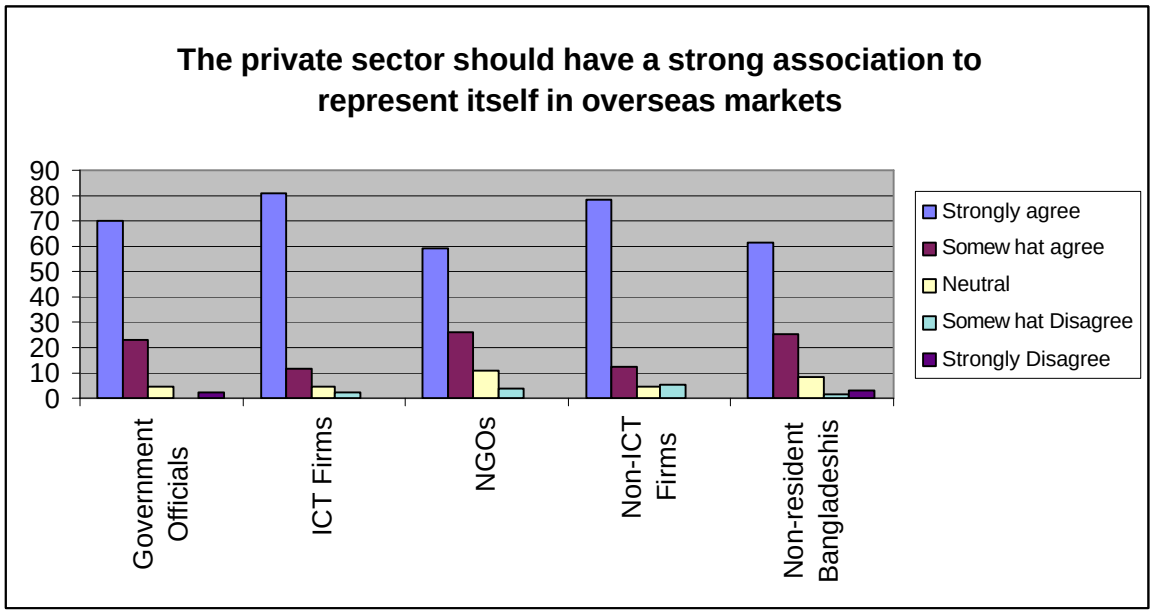
[10] Interview with Executive Director, Virgilio Pena, March 2002

- Additional deductions for training expenses
- Employment of foreign nationals made easier

Marketing of Bangladesh ITES sector

For a new entrant in a market, marketing is a crucial, and somewhat expensive, requirement in order to development some awareness of the new product. The private sector in Bangladesh has made significant progress in developing a marketing push through its industry associations. The public sector, however, can also contribute to this effort.

However, the study survey indicated that even though all groups supported government involvement in promoting Bangladesh industry, they also felt that the private sector should be involved with a strong association if its own. ICT firms in particular felt that an association was crucial.



The Philippines provides an example of how this public/private collaboration can take place.

The most visible effort of the ITECC and the Board of Investments in promoting the industry is through the BOI's Center for International Trade Expositions and Missions (CITEM; the CITEM director in charge of the IT sector serves on ITECC's Business Development sub-committee). CITEM has already sponsored two trade expositions in Manila, "e-Services Philippines", which reportedly was well attended by Filipino service providers (129 exhibitors) and other Filipino companies but not by international prospects.

CITEM has also sponsored several trade missions to the USA, on a cost-share basis with Filipino-owned ITES companies. In addition, CITEM facilitated the participation of ITES companies in the Offshore Outsourcing conference held in the United States in October 2001.

These missions were considered an effective means to create awareness for the Philippines ITES industry. No contracts were agreed upon during the missions; however, the trip generated sufficient interest as evidenced by follow-up activities of companies inquiring about and scheduling investigative trips to the Philippines (particularly for call center vendors). Future trade missions are already scheduled for 2002, including the conference for the American Medical Transcription Association in Florida.

The Board of Investments in 2002 commissioned the Gartner Group to produce a capabilities study of the ITES industry in the Philippines, at the cost of $60,000. The early results of the study (to be published May 2002) confirm the country's strengths in call centers and BPO. The study's costs were considered an effective investment considering the influence and reach of the Gartner Group, and the resulting positive outlook for two of the Philippines' target sectors.

Role of NRBs

A common perception of the success of India in this market is the role that non-resident Indians play in marketing Indian firms. The survey revealed that the NRBs do not play the role in Bangladesh that the Non-Resident Indians are reputed to play. Major findings include:

- NRB community is loose-knit. Although there are significant numbers of NRBs that stay in touch with each other and with the business community in Bangladesh, majority have only occasional connection with either community.
- Harder view of Bangladesh as a competitor in IT and ITES, given their exposure to business environments in North America, Europe and Asia Pacific.
- Believes low labor cost is only competitive advantage.
- Strong opinions that the government has not fostered business-friendly environment with its control over infrastructure and levels of corruption.
- Can play major role, specifically in knowledge transfer and marketing.
- Investment is not a major contribution NRBs can make at this time.

Anecdotal information suggests that where non-resident Indians may have achieved positions in foreign corporations that allow them to direct business to Indian firms, non-resident Bangladeshis are not yet in that position. Because they have moved into this sector later, most non-resident Bangladeshis are working as engineers and programmers. Very few have moved up the ranks yet to Vice President or above, or have founded their own firms. In the future, non-resident Bangladeshis may play a larger role in the success of the country in this sector. The marketing efforts certainly should keep in touch with them and their Associations in the future.

5. Recommended Actions

Implementing a complicated strategy to enter a new market is difficult and involves a large number of steps that sometimes must be coordinated. Recommendations for that strategy are listed here.

For ease of understanding, recommendations are grouped around major components of an ITES market strategy. However, many recommended actions will have impacts throughout the various facets of this sector. Recommendations are grouped under:

- Improving Productive Capacity
- Lowering costs, improving efficiency
- Marketing and Business Environment
- Focusing on Growth

Many of the long-term components of the strategy are listed under the growth category.

Improving Productive Capacity

Actions	Participants	Possible Impact
1. **Develop international standards for education in IT**. The customer will look for some international standard by which to evaluate that workforce on external, not internal measures. It is therefore recommended that metrics on the following standards be maintained: ▪ Vendor certifications ▪ Results on internationally recognized exams ▪ Affiliations with internationally recognized Universities ▪ Survey rankings	Ministry of Education, Private sector IT association	It is too early to expect Bangladesh to score well on consultant survey rankings- this should be a mid term goal. Initially Universities and training Institutes must increasingly focus on standards that will be recognized by the international customer. This information will also serve as an element of Bangladesh ICTES marketing.
2. **Support the ICT Task Force** in defining skill deficiencies and supply/demand numbers.	Prof. J.R.Choudhury and his team in defining skill deficiencies and numbers of student enrolment and projection of demand.	Better coordination of the education system and the private sector
3. **Develop programs for informed consumer choice in private training institutes.** It is recommended that a consumer awareness program provide students the information to select a training institute conforming to industry minimum standards. Typically in emerging sectors the 'pioneers' in the sector are followed by numerous other entrants attempting to copy the success of the early entrants. It is in the interest of the	Professional Training Institutes (some of which are ISO9000 certified). While some government control is attempted in various countries, consumer education and definition by industry of minimum standards is most effective in targeting low value vendors.	Institutes not providing value eventually become known to the public or do not gain recognition within the industry.

industry to define standards for itself that will gain public confidence.		
4. **Create a Training Institution Association.**	Private sector firms. BCS, ISP Association	Associations of member organizations similar to BCS and the ISP association can play a valuable role in creating standards, giving accreditation to its members, helping to upgrade the skill levels of all faculty and creating a consumer awareness criteria for Training Institutes.
5. **Private Sector-Education Dialogue.** Develop a close relationship between the private sector and educational institutions. It is important that the private sector make known its needs for human resources in various skill areas. It will then fall to the training institutes to respond. A close relationship will allow scarce resources to be directed where they are most needed. The rate of change and evolving business needs make it inadvisable for government to prescribe a curriculum of study other than in broad terms. To do so may mean resources are expended in a subject area that is out of date.	A Training Association is in the best position to prepare such a check list. The experience in other nations is that Government involvement is not as effective. The efforts of the private sector, ISP Association, BCS etc. to make known their requirements is well placed provided educational institutions are in a position to respond.	Typically such consumer awareness programs might provide knowledge of selection criteria such as: - Internationally recognized curriculum - International vendor certification program - Existence of a computer lab - Minimum hours of study - Minimum hours of lab work - Internship programs - List of faculty and their qualifications
6. **Develop domestic capacity through e-government applications:** • Computerize all ministries and GOB departments starting with a pilot ministry such as Commerce and MOSICT. • Use local IT Training institutes. • Post all information and forms on the web. • Introduce interactive applications, such as forms, applications, tender, tax payment and so forth.	GOB Donor support recommended.	Private Sector will be mobilized in ITES. Easier access of GoB information to the public. Enhanced transparency.
7. **Increase funding for technology education** at all levels. A strong base of literate, computer literate students with solid basic skills is the entry point into ICTES training and the workforce. It was found that funding at the University level did not necessarily follow the enrolment numbers.	The private sector can play a role here as in North America where the private sector sees an economic benefit in supporting educational institutions with facilities, work placement opportunities, expertise and advice.	In an environment where rapid expansion is desired it is critical that resources for the educational sector match enrolment targets otherwise already stretched resources are stretched further resulting in a decrease in quality.

Lowering Cost, Improving Efficiency

Actions	Participants	Possible Impact
8. **Allow ITES exporting companies to connect to international telecommunications networks**, allowing immediate access to the affordable, reliable, and available telecommunications service needed for the ITES industry.	BTRC, BTTB	International communications at prevailing world rates.
9. **Allow private sector aggregation of international BW through international gateways.**	BTRC, Private telecommunications firms	More effective use of international communications, lower cost
10. **Provide technical assistance to BTRC**. Projects include development of specific bodies of regulations to cover such things as dispute resolution, radio spectrum allocations, and cost-based tariff evaluations.	BTRC, Donors	More effective operation of the BTRC
11. **Implement sub-marine cable project.** Explore possibility of private sector participation in the project.	BTTB/private sector BTTB, BTRC	Significant increase in BW at lower cost. Facilitates ITES and Bangladesh's entry to ITES segments that require large BW.
12. **Legalize voice over Internet protocol (VOIP)** by private telecommunications providers.	BTTB, BTRC, private sector	Lower cost telecommunications
13. **Support universal application of computerized transactions** in banks and other financial institutions.	Financial institutions, GOB, Donors	Improved international payment systems.
14. **Establish training program for banking professionals** to improve their knowledge of the IT sector.	ITTF, Bangladesh Bank, MOF, Financial institutions	Improved financing of IT sector businesses.
15. **Continue no-VAT, no-tax policy on computer and related products**	ITTF, Ministry of Finance	Improved environment for investment in ITES sector.

Marketing and Business Environment

Actions	Participants	Possible Impact
16. **Develop a strong ITES marketing campaign**, including: • Support IT-firms in their marketing efforts (identification of buyer, selection of market niches, regular participation in software fairs to make presence felt in the international area). • Joint marketing campaign with private sector, including BASIS, BCS and ISP Association and group firms in the same industry/niche. • Private associations conduct market research to continuously stay in touch of the market and feed information to ITES firms and GOB. • Financial support from GOB/donors for implementing sustained marketing efforts by private sector groups in domestic and international markets.	IT firms, BASIS, BCS, ISPs and EPB. GOB support. Donor support.	Export enhanced. Sustainable growth ITES sector Bangladesh will gradually be recognized as ITES provider country. Increased employment.
17. **Provide technical assistance to ITES advocacy groups** (ISP associations, computer industry associations, chambers of commerce, etc.) to help them better inform their membership about policy reform, and help stakeholders understand the regulatory process and express arguments to the regulator that are constructive.	Donors, private sector associations	A more business friendly regulatory environment
18. **Link BTRC with regional regulators.** Assure that the BTRC has ample opportunity to benefit from the experiences of regulators in other countries that face similar conditions. Participation in regional and other international forums will be beneficial.	Donors, BTRC	Better consistency with international standards and practices
19. **Provide model legislation and regulatory frameworks to stakeholder groups**. Material should be from other countries, and assist these groups in using these examples to formulate an appropriate policy position tailored to Bangladeshi circumstances.	Donors, private sector associations, BTRC, GOB.	Better IT policy in Bangladesh
20. Internships and work experience programs. Part of the demonstration of a highly skilled ICTES workforce comes from performance on the job. In preparation work experiences as part of the training and education of ICTES professionals should be provided.	Donors, educational institutions, GOB	'Real world' and gains valuable work experience which is a benefit both to the student and to the private sector. Such programs also ensure closer communication between training institutes and the private sector.

21. **Interconnect cell phone system and landline system.**	BTRC, BTTB, cell phone operators, MOPT IT Task Force, MOSICT	Better communications within Bangladesh
22. **Develop a transparent manual based management system with BTRC** so the players in the telecom sector know the rules of BTRC operations.	BTRC, GOB, BTTB, phone companies, business associations.	Better understanding and predictability of BTRC decisions.

Focusing on Growth

Actions	Participants	Possible Impact
23. **Finalize an IT Action Plan (e-plan)** with input from stakeholders and building on past efforts such as USAID/JOBS e-conference, MOSTs IT Action recommendations, etc.	ITTF, MOSICT, FBCCI	A roadmap for development and priority areas identified with participation and ownership of the stakeholders.
24. **Continue the implementations of liberal pro-private sector policies** (tax incentives, IT parks creation, further liberalizing foreign ownership, repatriation of hard currency, etc) encouraging imports of ICT enabling products, exports of ICT products and services, and to attract FDI in IT based on successful world models such as Ireland.	ITTF, Ministry of Finance	Improved environment for foreign and local investment.
25. **Legal and regulatory reform**, including: • Promulgate IT Law now under review • Promulgate Cyber and Digital Signature law currently under review • Review other criminal and civil laws to incorporate clauses relating to electronic transactions.	Ministry of Law, MOSICT, IT Task Force, Law Commission Advocacy by BASIS, BCS, ISP Association, Chambers, donors.	Provide strong legal environment to encourage electronic transactions and investment in ITES areas.
26. **Assist the BTRC to be an independent and strong regulatory agency**, including: 1. Separation of the BTRC from MOPT 2. Providing financial power to BTRC to make its own budget and compensation package for staff members 3. Providing training to all levels for effective functioning of the newly formed regulator; 4. Providing opportunities to observe functioning of similar regulators in the region and outside the region; (e) assisting to develop specific bodies of regulations in each areas of its activities,	GOB, MOPT, IT Task Force, MOSICT Donors, business associations as advocate. They should facilitate the process of strengthening BTRC	A fully privatized telecom sector leading to higher investment in telecom sector, and lower communication cost for businesses
27. **Strengthen industry associations and business organizations**, such as FBCCI and DCCI. The associations can lead in enhancing the competitiveness of the Bangladeshi ITES industry. This could be in the form of marketing and promotion exercises, sponsored studies to monitor and benchmark the industry and to lobby with the government for necessary reforms and actions.	IT firms, GOB support. Donor support BCS, BASIS, SIP Association, FBCCI, DCCI	Better public and private sector coordination.
29. **Provide strong thrust to facilitate supportive infrastructure for proliferation of IT** Enabled Services throughout the country, with stress should on developing suitable infrastructure in `non-software' cities. ITES companies set up in EPZ units should claim tax holiday	ITTF, MOF	Attract foreign direct investments (FDI) and expatriate Bangladeshis to channel capital to set up ITES providing firms in the country

30. Provide **GOB Financial support for marketing campaign.**	GOB Donor support	Better funded and more effective marketing campaign.
31. **Promote the use of the ".bd" Internet domain name**. This helps identify Bangladesh as an "IT competent" country and "brand" Bangladesh on the Internet.	GOB, industry association	Visibility and some revenue generation
32. **Enable IT firms to gain access to better lines of credit** (Program like LPG/USAID should be continued). Moveable asset financing for ITES firms.	IT firms, BASIS, BCS, ISPs. GOB support. Donor support	Better financing of the ITES sector
33. **Develop and implement "Bangladesh Ltd."** Campaign in a sustained fashion in collaboration with GOB (MOSICT, Ministry of Commerce, IT Task Force) and business associations. Regularly attend targeted software fairs as a country.	GOB and business associations, NRBs (as appropriate and practical).	Presence of Bangladesh in international ITES market enhanced. Increased export.
34. **Deregulate the landline sector of telecom.** This will allow for increased private investment. 35. **Privatize BTTB**	MOPT, Privatization Commission, Ministry of Finance	Increased connectivity. Low telecom cost. Increased investment and employment in ICT sector.

Annex A: Analysis of Market Segments

Data Processing

Service	Data Processing
ITES Segment	Low – Tier A
Description, Definition	Data Processing (DP) involves the broad category of capturing, manipulating and storing data obtained from various sources. Traditional DP services comprise of punching data from manually filled forms, images or publications; preparing databases and integrating them. More recent developments in multimedia and the Internet has resulted in more diverse sources such as digital images, sounds and video, and managing records from internet-based queries. DP has become more important to corporations and organizations, as most businesses have become dependent on timely delivery and effective use of information. Industries and companies have to rely on data for quick decision-making in an increasingly information-driven, globally competitive landscape. Outsourcing has become a critical aspect of companies' information strategy; in-house personnel are retained and required to use skills keenly focused on the enterprises' "core competencies", thereby releasing the lesser value-added services to outside vendors.
How It Works	Clients for DP services are companies and organizations receiving or generating large quantities of forms in handwritten or typed format; these documents are usually time sensitive. Forms can be sent physically or can be scanned and transmitted to the vendor's facility. Types of Data Processing: Document Preparation Data Entry Image Capturing Image Keying OCR & ICR Processing Image Storage & Retrieval Handwritten, Machine Print, Mark Sense, Bar Coding (Reader Response can be captured and processed from any hard copy or faxed document) – see below Data entry front end edits ASCII format for upload to company database Data Capture examples: General Ledger, accounting forms Air bills Account, Credit Card, Auto Loan, Mortgage Loan Applications Health Care Forms Remittance Processing Insurance Documents Catalog Orders Many companies enter data manually (from image or paper) or through computer-assisted data capture using OCR (optical character recognition), ICR (intelligent character recognition), mark sense (like pencil-formed bubbles on a form), MICR (magnetic ink character recognition, like checks), and Bar Code (like grocery store items). The data is then processed or checked by validation routines that are customized for the client, including table look-ups, data/range checks, or relationship

Service	Data Processing
	validation. Processed documents are then sent to verification stations for quality assurance, after which the data is transformed into the client's formatted record layout and transmitted to the client's computer. Further value can be added by vendors who could also provide data analysis – database searches, database integration, data mining and custom reports. Higher in this value chain is data warehousing and architecture, involving the design of how to optimize accessibility to and relationships among the data. There are also companies striving for "end-to-end" services where they provide complete back-office operations management including data maintenance and customer support.
Size, Forecast	Gartner Group (October 2000) forecast for "Transaction Processing Services" Worldwide: 1999 - $27.7 billion USD 2001 – $37.8 billion USD 2004 - $67.9 billion USD compounded annual growth rate, 1991-2004 = 19.3% Forecast by region, 2004: United States =48% Europe =27% Japan =8% Other Asia =7% Other =7%
Customers and Prospects	Industries or sectors that provide high information turnover and which also need efficient archiving of records for frequent access: Insurance, Banks Public utilities; Telecomm companies Airlines; Delivery services Government agencies, municipalities Legal Hospitals and Health Maintenance Organizations Publishing Payroll Providers Accounting firms serving these industries
Infrastructure and Requirements	• Network-capable PCs and servers • Scanners and readers as necessary • Word Processing, Database software • Connectivity – high-speed line; must be reliable and ensure minimum disruption and data packet loss; redundant links preferable to ensure against data and productivity loss
Labor	• Majority requirement – data entry operators; high school graduates; keyboarding skills • Other – project leaders; quality assurance experts • Multiple shifts are standard
Success Factors	• Quality of work process – accuracy, efficiency; in many instances, clients will have already studied and established data workflows and processes that are proven to meet their needs • Availability of abundant manpower • Ability to dedicate resources to client's needs • 100% uptime of facilities/connection

Service	Data Processing
	• 100% availability of data • Privacy and security of data
Potential Pitfalls	Employment growth of data entry keyers will be dampened by productivity gains, as various data capturing technologies, such as bar code scanners, voice recognition technologies, and sophisticated character recognition readers, become more prevalent.
Other	Subcontracting of jobs is common; smaller companies may start providing services for a larger company with the reputation and relationships to attract larger customers. The larger company may focus on providing more value-added services, or building a portfolio of accounts.
Competitive Landscape & Notable Companies	Competitive and mature offshore outsourcing segment. As expected, DP provides lower value and results in low margins. Many longer term vendors are striving to "move up the value chain" by adding more analytical data reporting and data management. Where cost and savings are closely scrutinized, Western companies are finding established countries/providers (India) too expensive and are likely to shop around. ▪ LiveTech Solutions – a conglomerate providing low to high end IT services; based in the US with offices worldwide including a "Technology Center" in Hyderabad, India. ▪ EDM International– one of the largest diversified data processing companies in Mexico; located across border of Texas; has 2300 employees; positions itself as "understanding US business needs" by hiring trained staff educated/experienced educated in the US Also notable are large corporations establishing subsidiaries offshore solely for the purpose of back-office processing, e.g. in India – British Airways (frequent flyer program data), GE Capital (accounting, credit card and loan processing)
Government Policies and Incentives	Standard incentives for ITES.
Sources	Selected list: http://www.bls.gov/oco/cg/cgs033.htm US Bureau of Labor & Statistics; Profiles labor requirements http://www.dmr.com/corporatif/en/news/us/content/gartner_report.pdf Gartner Group industry forecast http://www.stpi.soft.net/ites_dp.html Software Tech Parks of India

Data Conversion, Digitization

Service	Data Digitization (also Data Conversion)
ITES Segment	Tier A or B – Low to Medium
Description, Definition	Process by which physical or manual records such as text, maps, images, video and audio are converted into digital forms such as data files, CD-ROMs, and recently into content for the internet or other web-based applications (e.g. XML/SGML or HTML). The latter is a fast growing trend for publishing and corporate documentation. Benefits of digitization include: a) long term preservation of documents, b) orderly archiving of documents, c) easy and customized access to information, d) easy information dissemination through images and text, CD-ROMs, Internet, intranets

Service	Data Digitization (also Data Conversion)
	and extranets. Some applications of digital technology include: books, research journals, annual reports, legacy documents, database archiving; movies, catalogs and brochures, training and educational manuals. A sub-category of data digitization is Geographic Information Systems (GIS); see the separate Segment Profile on GIS.
How It Works	The process begins with identifying the client's objectives, needs and intended use of the digitized records. As with most client arrangements, it is recommended that written requirements, specifications, and agreement on final deliverables are completed with the client's final approval. The following general schema was obtained and revised from a digitization software provider along with data from STPI (see below): 1. Administration - Document Classes and Batch Management -define document classes, which specify both the index fields and the processing queues for each document. 2. Scanning - Documents to be scanned are prepared by sorting into batches. As in any data entry production system, the batches are entered into the system, in this case by the scanner operator. 3. Image Processing and Character Recognition -using OCR (Optical Character Recognition) software, the documents are scanned by an operator -old and faded images are recovered using advanced digital correction software; sound and video data are treated similarly 4. Index, Index Verify and Validation Scripts - data entry operators are presented with images for keying and verification; effective double-keying can be performed by routing the same documents sequentially to two operators. -validation scripts can be used to verify data formats, and to specify that certain fields must match; custom scripts can go much further, by filling in fields from an external database (indexing, tagging or mapping). 5. Quality Assurance and Rescan - the Quality Control operator sends defective batches are queued to the rescan workstation, with instructions regarding rejected document or page to describe the problem to the Rescan operator 6. Release -after Quality Control and Indexing, the images and data are "Released" to the target application, which could include Microsoft SQL Server, Informix, Oracle, and Sybase. The digitized sources of information are then integrated on a CD-ROM or other media, depending on the client's intended use. 7. At this point, the electronic data could be further converted into final XML/SGML files for digital use (e.g. web, diagnostic equipment, handheld and voice devices)

Service	Data Digitization (also Data Conversion)
Size, Forecast	Not readily available. This segment is bundled with other data segments, e.g. conversion, processing, transcription or integration.
Customers and Prospects	• Corporations with legacy documents; finance and insurance • Training • Legal • Libraries, Universities • Government • Museums and educational, research organizations • Music and film industries
Infrastructure and Requirements	• Hardware – computers/servers with fast chips and abundant memory; scanners; color printers; plotters • Software – CAD, OCR, digitizing software (many packaged software available, e.g. Adobe, JASC, Macromedia, Correl; but there are also proprietary digitization software) • Abundant storage media • Telecomm – high speed data link • May require climate control depending on materials
Labor	• Low, Semi-Professional depending on project type • Low end data conversion: hand/eye coordination, keyboarding skills • Subject matter expertise may be necessary • English proficiency may be necessary, especially for project and relationship managers • Technical training to handle equipment • Process, workflow management; quality assurance
Success Factors	• Accuracy is paramount – extremely low margin for errors is common, specifically with GIS (often quoted 99.995% accuracy) • Turnaround time
Potential Pitfalls	• Rapid technology obsolescence of digital technologies • Media instability The above could pose risk in terms of investment in infrastructure that could be deemed obsolete.
Competitive Landscape & Notable Companies	http://www.dclab.com/default.asp U.S.-based Data Conversion Laboratory – privately-held; no financials readily available. No overseas market leader easily discernible. Countries/areas where offshore outsourcing is taking place include the India, Philippines, Caribbean. http://www.acmedataservices.com/ (India)
Government Policies and Incentives	• hardware and software duties, customs • income tax laws – depreciation of equipment • export-import policies for hardware and software; exportation of services • copyright and IP • Telecommunications costs and availability of high-speed data links
Sources	http://www.ukoln.ac.uk/nof/support/help/papers/digitisation.htm Provides background on how digitization Works

Service	Data Digitization (also Data Conversion)
	http://www.stpi.soft.net/ites_dd.html Provides an overview of data digitization http://www.outsource2india.com/services/data_conversion.asp Provides an overview of data conversion

Medical Transcriptions

Service	Medical Transcriptions
ITES Segment	Data Tier B (Medium)
Description, Definition	Documentation of doctor's findings and results of a medical investigation. Purposes for these documents include: 1) the need to maintain basic hospital data, 2) recording of data and medical procedures for research and 3) maintaining records for insurance purposes.
How It Works	See diagram below. 1. Doctors are trained to dictate to a recording devise, typically a magnetic recording device, or recently an 800# attached to a server. 2. The sound is digitized and sent to the transcription center via satellite link. The digitized data is converted back to sound. 3. The trained transcribers listen to the dictation and transcribes. Transcribed files go through quality control; corrections are made as necessary. 4. The transcribed reports are transmitted back to the doctors' country in a document file (e.g. Microsoft Word).
Size, Forecast	• Size of market = currently estimated $15 billion, as estimated by HealthScribe CEO (industry data not readily available from U.S. government); other estimate $10-25 billion, MT Industry Alliance • Forecasted 20% growth p.a. (due to rising health care needs of an aging population in the U.S.; decline in U.S. supply of transcribers) • Only 20-30% of the market is currently outsourced overseas
Customers and Prospects	U.S. hospitals, HMOs and other medical groups; marketing arrangements are typically done through intermediaries which offset profits
Infrastructure and Requirements	• Magnetic media (tapes) sent via courier – this practice is rapidly being replaced by toll-free telephone method below • Toll-free telephone line designated for each doctor into which s/he can dictate message; converted into digitized message by a dedicated server. Reduces shipping costs and time • Web-based Application Service Provider (ASP) that provides digitized voice files to be transcribed, workflow and management tools for both MT customer and MT provider. Examples: E-Transcribe, Sten-Tel • Servers • High speed data links (internet, satellite; Virtual Private Networks) • Stable power supply • Word processing software and equipment (earphones, stop/start foot pedals) • Medical transcription programs which include medical libraries, terminology, definitions, spell checker

Service	Medical Transcriptions
Labor	• English proficiency; good grammar and punctuation • Post-secondary education (vocational or community college); certification from Am. Association for Medical Transcription may be required • Good listening skills; keyboarding and word processing skills • Familiarity with medical terms and use of medical transcription software • Quality assurance and supervisory skills • Median hourly rate in the U.S. was $12.15, or $1,920 per month in 2000 (Dept. of Labor); in India, average is $308 per month
Success Factors	• Economies of scale; 50 stations considered minimum, with 150 operators on three 8-hour shifts • Direct marketing relationships with end customers (hospitals and health care groups) preserve profit margins; due to sensitive information, quality and trust in relationship are paramount • Lower costs, faster turnaround, higher quality • Additional value added through development of software and hardware tools
Potential Pitfalls	• Infrastructure costs can make this a business with high operating leverage offset by variable labor costs • Marketing Intermediaries can significantly affect profit margins and control relationships with end customers, although are often necessary to reach customers overseas • Many marketing intermediaries are suspect – many instances of providing training to earn fees but do not deliver business accounts as guaranteed
Other	• Concerns over privacy, confidentiality and security over the internet • Movement towards handheld devices for physicians and emergency medical personnel • Voice/speech recognition not considered a threat at this time as the technology has not sufficiently been developed
Competitive Landscape & Notable Companies	Industry is highly fragmented with largest players commanding majority % of revenues. • HealthScribe: based in the U.S., with operations in India – 500 employees, 6 million lines of transcription per year; recently just broke even after 7 years; 71% owned by Max India (Indian-owned conglomerate) • CBay Systems: U.S.-based with operations in India; functions as service provider for franchisees; 2000 employees • Heartland Information Systems: U.S.–based with operations in India • Transkripsyo: Philippines
Government Policies and Incentives	• Zero import duties on computer hardware, software, books, training materials in magazines, CD-ROM • Ten year tax holiday in export-processing zones • Exim Policy 1999 – allows import of wide range of computers without obtaining licenses See India Info Online for more comprehensive list • India Info Online http://www.indiainfoline.com/cyva/repo/medi/ch08.html

Service	Medical Transcriptions
Sources	• American Association for Medical Transcription http://www.aamt.org • Medical Transcriptions in India http://mtindia.org • HealthScribe (a leading Indian MT firm; CEO interview by the Wall Street Reporter) • India Info Online http://www.indiainfoline.com/cyva/repo/medi/ch02.html • STPI http://www.stpi.soft.net/ites_mt.html

Animation & Multimedia

Service	Animation and Multi-Media
ITES Segment	Tier B – Medium
Description, Definition	Animation is the art of creating movement in visual media such as film or the internet. It is commonly used in entertainment (cartoons, full-feature animation films), advertising (TV commercials) and web-based programs (e.g. online learning). Multimedia as a new form of content delivery allows for a new way of communicating and exchanging information, achieving this in more convenient and capable forms. The user becomes involved through multi-media by integrating the controlling and processing capabilities of computers with digitally stored information that can be presented using text, graphics, sound, animation, and still or motion pictures. *(Interactive Multimedia Arts and Technologies Association)* Applications: Arts: Online books, interactive terminals, museum exhibitions, multimedia theatre performances Entertainment: Full-feature films, TV commercials, digital video disk films, interactive television, video games, virtual game centers Education and Training: Educational software, online courses Communications: Web sites, online teleconferencing and electronic publishing Health: Tele-medicine, computerization of patient files, medical imaging Business: Corporate presentations, Home-shopping, direct access to government services, electronic data exchange
How It Works	These are various types of multi-media production and stages, according to Penta-Media, the leading animation company in India: <u>Pre-Production</u> ▪ Concept is developed into a story, and then a screenplay or script. ▪ Concept drawings are done, which become bases for storyboards. ▪ Background layout and finally the background art is completed. Costume, appearance, models and props are designed, while simultaneously a storyboard of angles, shots, dialogues and sound is prepared.

Service	Animation and Multi-Media
	▪ Animation is then coordinated between frames and background voice, etc. <u>Motion Capture</u> Optical motion capture involves tracing and capturing the movements of an object and feeding it to a system generated 3D model, thus animating it. ▪ Motion capture set up with high-speed Falcon cameras which emit infra red rays that are reflected off special scotch brite markers fitted on to the object's body. The reflected data is read by the cameras at speeds ranging from 60 to 240 frames per second. ▪ Expert technicians then work on the collected data and give out the final output in a format that convenient for usage by software packages. <u>Film Conversion</u> ▪ Synchronization of sound and picture for both small and big screens ▪ Video format conversion; Real-time movies to frames/ frames to real-time movies ▪ Digitizing of sound; output in any medium, film, video or CD- Tapes used: Beta, digital beta and DAT. <u>2D Animation</u> Involves drawing out every detail of an action into separate cell sheets, and then running them together at a very high speed so that an illusion of motion is created on screen. ▪ Creative team includes; traditional artists, key animators, background designers, ink and paint experts, computer professionals, design and model professionals, visualizers and compositors <u>3D Animation</u> Involves three specific stages; modeling, texturing and animation. ▪ Modeling – building the characters and sets that go into the movie ▪ Texturing – life-giving touches like color, texture etc. are added to the character model ▪ The last stage is animation, where movement is introduced into the model <u>Post-Production</u> Comprises of scanning, non-linear editing and recording. Post-production activities include “Rotosplining”, “Rotoscoping”, Compositing, Motion tracking, Camera stabilization, Image retouching, Film restoration, color corrections, morphing and warping.
Size, Forecast	Robi Roncarelli, President, editor and publisher of PIXEL, the international magazine devoted to animation industry predicts: ▪ $30 billion by year end 2001 ▪ By 2005 up to $70 billion ▪ Growing at a rate of 25% per year ▪ Share of the global animation business: o North America, 46.9 % (down from 52% in 1996) o Asia-Pacific, 28% o Europe, 25.1% o The biggest gainers as vendors are Asian countries like the Philippines, Thailand, Korea and Japan. Outlook for outsourcing in this segment appears promising as Hollywood feature films include more animation and special effects, while cost cutting has also become more of a concern.
Customers and Prospects	• Entertainment vertical companies (film, TV, cable, CD/DVD); in the U.S., there are 7 major studios, 3 major networks, and large number of independent studios producing for film, TV and the Internet • Advertising • Gaming software companies

Service	Animation and Multi-Media
	*Entertainment category = 72% of market, according to PIXEL • Publishing houses • Training and education content providers
Infrastructure and Requirements	• High-end hardware, e.g. Silicon Graphics workstations • High-end software, e.g. Maya, Softimage and 3DSMax • High-end scanners, e.g. Kodak Genesis scanners, Kodak Cineon image
Labor	Semi-professional to Professional • Drawing and creative skills • Computer graphic skills • Fine arts • Film production / film technology • Multimedia marketing / Communication
Success Factors	• Size, capabilities – volume of production • Quality, talent pool • Delivery dates
Potential Pitfalls	Although the financial threshold (e.g. costs of hardware and software) have been steadily decreasing and has lowered barrier to entry, larger, more profitable projects from major studios do not award these contracts to smaller, lesser-known companies.
Competitive Landscape & Notable Companies	India ▪ Total Infotainment ▪ Penta-media Graphics(2200 employees) ▪ 2D/3D Animation (300 employees) Japan ▪ Toei Animation – largest animation company in Japan; employs over 150 animators in the Philippines
Government Policies and Incentives	Same for other ITES. ▪ Intellectual Property Rights in many instances.
Sources	http://www.hrdc-drhc.gc.ca/hrib/hrp-prh/ssd-des/english/industryprofiles/mul/overview.shtmlArts Provides definition of multi-media sector http://www.domain-b.com/infotech/itnews/20010922_animation.htm Provides news of Indian animation industry

Geographic Information Systems

Service	Geographic Information Systems (GIS)
ITES Segment	Tier B – Medium
Description, Definition	"A computer system for capturing, storing, checking, integrating, manipulating, analyzing and displaying data related to positions on the Earth's surface. Typically, a Geographical Information System (or Spatial Information System) is used for handling maps of one kind or another. These might be represented as several different layers where each layer holds data about a particular kind of feature. Each feature is linked to a position on the graphical image of a map." (Univ. of Edinburgh GIS Society) Also referred to as “Geo-spatial information”. Map Data Types: • Base maps – geographic area maps, street/highway maps; boundaries for

Service	Geographic Information Systems (GIS)
	census, postal and political areas • Business Maps and Data – maps with census and demographics; consumer products; financial services; real estate; other industry; emergency preparedness • Environmental Maps and Data – environment, weather, environmental risk; satellite imagery (topography) • General Reference Maps – world, country maps with data Examples OF GIS • Area map with related customer and prospect information for use by sales force to plan calls • Database creation of infrastructure (water, sewer, gas, electric, steam, telecommunications and transportation) and engineering floor plans, shown against New York City's cartographic base maps; used for rescue efforts at the World Trade Center See for an overview: http://www.esri.com/library/fliers/pdfs/what_is_gis.pdf
How It Works	Components of GIS services: 1. Data Collection – geographic data and related tabular data can be collected in-house, purchased from a commercial data provider, or provided by the source company 2. Data Interpretation – determination of how the data will be represented within the spatial map, according to the company's objectives for the GIS 3. Data Conversion and Integration including scanning, digitization and format conversion – GIS systems integrate the spatial data with the other data resources, which can be organized according to a database management system (DBMS) 4. Digital Data publishing – final format of the GIS and results The process is similar to and can be viewed as a sub-segment of Data Digitization (see Segment Profile – Data Digitization).
Size, Forecast	• GIS total revenues reached $7billion annually in 2001 (according to Daratech, IT market research company, Cambridge, Massachusetts); growth rate or forecasts not found • Of $7 billion, nearly $1 billion in software; over $900 million in hardware; the rest in consulting, systems integration, database development • Most of GIS services sent offshore (e.g. to India) typically consists of data collection, conversion and interpretation (i.e., generating user defined outputs for which data are either provided by the client or need to be obtained/created)
Customers and Prospects	• Business Marketing – census, demographics, consumer research, market tests • Utilities – Electric, Gas, Water, Waste • Government – Forestry, Land Use, Environmental, Defense/Military, Transportation, Emergency/Disaster Relief Services, Risk Management • Agriculture, Forestry, Geology
Infrastructure and Requirements	• Hardware – powerful PCs or servers with abundant memory; plotters; graph workstations; scanners; digitizers • Software – database management system; GIS software (packaged or proprietary) – supports geographic query, analysis and visualization • Infrastructure – high speed data link
Labor	• Professional, analytical; engineering

Service	Geographic Information Systems (GIS)
	• Project management, quality control • For Data Digitization – basic rules-based skills; see section on Data Digitization (Conversion)
Success Factors	• Accuracy, quality control – guarantees to 99.995% accuracy • Ability to handle various inputs; produce various outputs • Proven conversion process; on-going research and development to stay up-to-date with advanced technologies • Fast turnaround
Potential Pitfalls	• Rapid technology obsolescence of digital technologies • Media instability The above could pose risk in terms of investment in infrastructure that could be deemed obsolete.
Competitive Landscape & Notable Companies	• Competitive Landscape – majority of the market wealth is in development of GIS hardware and software; market is dominated by core group of 32 companies developing GIS software (Daratech) • Notable Companies ▪ ESRI – market leader, based in Redlands, California (2000 employees worldwide; no financials available) ▪ Infotech Enterprises Ltd. – provides GIS services, and also develops proprietary GIS software; development centers at Hyderbad, Mumbai and Bangalore house around 2000 software and engineering professionals http://www.infotechsw.com/ ▪ Intergraph Mapping and GIS Services, partnered with Rolta in India http://www.intergraph.com/gis/aboutus.asp ▪ GIS directory http://www.gisdevelopment.net/company/profile.htm
Government Policies and Incentives	• Hardware and software duties, customs • Income tax laws – depreciation of equipment • Export-import policies for hardware and software; exportation of services • Copyright and IP • Telecommunications costs and availability of high-speed data links
Sources	http://www.infotechsw.com/ http://www.stpi.soft.net/ites_gis.html http://www.geoplace.com/default.asp http://www.gisdevelopment.net/index.htm http://www.daratech.com

Software Development

Service	Software Development
ITES Segment	Medium to High
Description, Definition	Development of packaged or proprietary applications that work with hardware to accomplish tasks or manipulate information. Packaged software is generally designed and configured for a broad range of users; proprietary software is customized to meet specific needs of the business. Software has a wide range of products, and can be grouped as follows (Forrester Research, from The Economist, July 1999): ▪ General applications (e.g., word processing, database, etc.) ▪ Custom Vertical Applications (e.g., customized banking accounting systems) ▪ Development Platforms (e.g. Oracle, SAP, SQL) ▪ Development Tools (e.g. C++, Visual Basic, Java) ▪ Operating Systems (e.g. Windows, Mac OS) ▪ Utilities (e.g. virus protection, memory management) Producing software requires design, programming and testing among other procedures.
How It Works	There are various stages to software development, requiring various levels of labor skills and infrastructure: 1. Needs analysis, functional specification 2. Design 3. Coding (also known as programming) 4. Testing 5. Implementation and maintenance 6. Customization
Size, Forecast	According to Gartner Dataquest, October 2000: 1. Development and Integration services $27.7 billion in 1999, projected $341 billion in 2004 2. Software Maintenance $40.6 billion in 1999, projected $94.9 billion in 2004 For packaged software sales, estimated by the Business Software Alliance: $51 billion in U.S. sales, forecast $148 billion by 2005
Customers and Prospects	Regionally, according to Gartner Dataquest: 1. United States, 47% of the market 2. Europe, 28% 3. Japan, 11% 4. Other, 6% 5. Asia-Pacific, 5% 6. Canada, 3%
Infrastructure and Requirements	For the earlier software development stages, basic connectivity (dial-up, small bandwidth) can be sufficient. However, as the developer continues to the latter stages of the production cycle – coding, testing, implementation/maintenance, and customization – high speed and large bandwidth subscriber lines are required. The infrastructure requirements become higher during these latter stages due to the transfer of code (either work-in-process or final product) to the overseas client or project team, when data packet loss should be minimized.
Labor	There are varying levels of labor requirements for each software development stage:

Service	Software Development
	1. Needs analysis, functional specification: Very high knowledge and technical expertise; plus managerial and conceptual skills 2. Design: Same as above 3. Coding (also known as programming): Qualified programmers, project managers, technical documentation 4. Testing: Basic computer skills provided specific instructions for testing 5. Implementation and maintenance: Same as Coding 6. Customization: Same as Coding, Implementation; but may also require subject matter expertise for customization (e.g. insurance, airline industry experience)
Success Factors	Aside from qualifications in software development and relevant certifications: ▪ Ability to understand customer's business processes to effectively design solutions ▪ Project management ▪ Quality assurance ▪ On-time delivery
Potential Pitfalls	Poor project management quoted as the #1 problem with outsourced development projects (Cutter Consortium, November 2000). Common problem areas: ▪ Project exceeded budget ▪ System delivered didn't have required functionality ▪ Deliverables were of poor quality
Competitive Landscape & Notable Companies	49% of IT services market dominated by top 20 companies (IBM, EDS, Fujitsu, Accenture, etc.)
Government Policies and Incentives	▪ Intellectual property rights, policies and enforcement ▪ Policies that encourage foreign direct investment, joint ventures and subsidiaries – to attract leading companies
Sources	▪ Gartner Dataquest "IT Services Market Statistics", October 2000 ▪ Business Software Alliance, http:://www.bsa.org ▪ The REACH Initiative: Jordan's Software and IT Services Industry

Annex B: ITES Workshop Report

At the conclusion of this study, a workshop was held in Bangladesh for about 100 stakeholders in the sector, including IT firms, government officials, donor agencies, educators, and NGOs.

The workshop presented the findings of the study, and organized the participants into work groups to develop recommendations and suggestions on how to best develop ITES as an export industry for the country.

The agenda for the workshop included:

Opening Session:

Chairperson: Mr. Karar Mahmudul Hassan, Secretary, Ministry of Science and Information and Communication Technology

9:30 Welcome by Dr. Larry Forgy, Team Leader, ITES Sector Study Team
9:35 Remarks by Dr. Mary C. Ott, Deputy Mission Director, USAID/Bangladesh
9:40 Speech by Dr. Abdul Moyeen Khan, Honorable Minister, Ministry of Science and ICT
9:55 Remarks by the Chairperson

Business Session: I

Moderator: Dr. Mohammad Abu Yusuf, Senior Assistant Secretary, MOSICT
Presentations:

10:00 The external market for ITES: Risa Dimacali, Market Consultant, CARANA
10:45 Market issues in the survey: Dr. Larry Forgy, CEO, Coursemark

Moderator: S.M Iqbal, Managing Director, ISN

11:15 Early Bangladesh entries in the International Market by Bangladeshi firms
Technovista: by Mr. Nurul Kabir, Managing Director
Aftab IT Ltd: by Md. Akhtaruzzaman Manju, Operative Director
GSRC: by Amanat Ullah Khan, Chairman

12:30 Case study on the Philippine experience: Risa Dimacali, Market Consultant, CARANA

1:00 Lunch

Business Sessions: II

2:00 Panel on findings on conditions in Bangladesh

Moderator: Shah Alam Bakshi, Principal Scientific Officer, BANSDOC, BCSIC
Members:

- Prof. Jamilur R. Choudhury, Vice Chancellor, BRAC University

- A.F.M.H. Choudhury, Commissioner, Bangladesh Telecommunication Regulatory Commission
- Dr. Larry Forgy, CEO, Coursemark
- Dr. Jeffrey Cochrane, Consulting and Information Services, USAID

Presentations on the relevance to the ITES market of:

1. Policy and infrastructure
2. Human Resources
3. Survey finding on policy, infrastructure, skills

Work Session

3:00 Working groups: Strategy and Recommendations

A. Issue in Public and private Collaboration
   - Md. Musharraf Hossain Khan, Deputy Technology Advisor, MOSICT

B. Business Development and Marketing for ITES in Bangladesh
   - Imran Shauket, Senior Policy Advisor, JOBS project

C. The Key Supporting Factors for an ITES Sector
   - Dr. Mohammad Abu Yusuf, Senior Assistant Secretary, MOSICT

D. Creating a domestic Capacity for ITES in Bangladesh
   - Habibullah N. Karim, President, BASIS

Closing Session

Chairperson: Mr. Karar Mahmudul Hassan, Secretary, Ministry of Science and ICT

4:00 Reports by Working Groups
Moderator: Mr. Nurul Kabir, Managing Director, TechnoVista

5:00 Summary of Recommendations and Closing Remarks

Instructions for the work groups were as follows:

Instructions for afternoon working groups at the workshop on the market for ITES in Bangladesh

The objective of this exercise is to identify specific steps that can improve the competitiveness of Bangladesh in the ITES market. Each working group should determine what critical factors would promote Bangladesh in the ITES market. A spokesman for the group will then report back to the workshop on what specific actions will move Bangladesh and Bangladesh businesses toward a competitive position. Groups should prioritize the list of the most important measures in the short term and the long term.

Working Groups:

1. Issues in public and private collaboration

What would a public/private partnership for ITES in Bangladesh look like?
What goals and working groups would it have?

How would it be organized to represent the range of interests from software to data entry?
What resources could it use, and where would it obtain them?
How would it develop and execute a long-term strategy?

2. Business development and marketing for ITES in Bangladesh

What unique competitive advantages does Bangladesh have in ITES?
What are the market segments where Bangladesh can be competitive?
What are the best and most cost effective marketing efforts?
Is subcontracting a priority strategy?
What role can non-resident Bangladeshis play?

3. The key supporting factors for an ITES sector.

What steps are necessary for more available and lower cost connectivity?
What is the role of the Telecommunications Regulatory Commission?
What improvements are necessary in the education system, such as international standards and certification in education and training?
What is the role of IT parks, and should they be publicly operated, publicly financed and privately operated, or private?
How critical are other supporting systems, such as payment and financial systems, power, and transport?

4. Creating a domestic capacity for ITES in Bangladesh

How do you create domestic market for ITES?
What domestic private demand exists for ITES?
What immediate and implementable opportunities for e-government exist?
What business climate and government transparency changes are necessary?
What intellectual property rights changes are necessary?

The working groups produced a wide range of suggestions and recommendations for areas to improve the general IT environment in Bangladesh, as well as specific proposals related to ITES. Recommendations from the working groups included:

Group 1:

- There are few organizations in Bangladesh that formalize partnerships between the public sector and the private sector. There are a number of ad hoc groups that work together for particular issues, but not much history of collaboration.

- There is some history of public/private work together in infrastructure. The private sector worked with BTTB on interconnections issues to help bridge a gap there.

- The government and the private sector should work together on marketing and business development issues. The private sector put together a forum that would work with the

various government offices around the world to improve marketing. The public sector and the private sector would do this on a cost-sharing basis.

- It is critical for the students to have more practical experience to maximize their productivity. One possibility is to develop a professional apprenticeship program in the public sector. This would increase the student experience and develop better relationships between the public and the private sector.

Group 2:

- There is widespread agreement that the country has a negative image. The marketing strategy for the sector should include work on a more positive image for the country, as well as business development and marketing of individual firms.

- There needs to be a serious commitment to the legal infrastructure that promotes ITES and other IT services. This includes work on an e-commerce law, better regulatory environment, improved contract law, a digital signatures law, and others.

- A major marketing problem is the quality of products from Bangladesh. We need to improve our capacity to meet international quality standards. This includes increased international training in both technical and management skills.

Group 3:

- There must be more private and public investment in the telecommunications system. This would include better interconnections, an undersea fiber optics cable, and more bandwidth in the local loop.

- There should be more competition among VSAT providers, with more licenses being issued.

- There should be better interconnections among the data circuits of the ISPs within the country. This would improve the performance of local data exchange.

- The BTRC must treat all parties in the telecommunications system equally, and must be truly independent. This would mean, among other things, that it would have its own budgetary power. It must promulgate transparent guidelines for all investors and potential investors in the telecommunications system.

- The education system needs to adopt international certifications, and the quality of technical training must be upgraded and some institutions.

- There is some concern about the proposed IT Parks, and whether they are really needed at all. If they are constructed, they should be jointly financed and managed by the public sector and the private sector. Location is an issue, and they cannot be too far from the city.

- There is a need for better support systems. This would include bringing banking services on-line and interconnected. Reliable power is also needed, as well as better operation of the ports and customs services.

- The intellectual property laws should be strengthened and enforced.

Group 4:

- The government should make use of the Internet as a service delivery mechanism. In particular, it should engage in e-health and distance education programs in order to push government benefits out to rural areas.

- The Commerce Ministry should be a champion for e-government, and should lead by example in getting its forms and information on-line.

- In addition, the government should embark on a number of small projects to increase confidence and familiarity with e-government and electronic commerce.

- It should also digitize its documentation, including developing a standardized coding scheme. This would allow greater access and transferability of the data.

- The government should implement a directive to give preference to local software producers in order to spur growth in the industry.

- There should be recognition of the need for a computer literacy program that can be promoted by the government.

- The postal department should consider using its on network to provide for cyber kiosks in underserved areas.

Annex C: The opinion surveys of this study

NOTE: The full data set of these surveys is available by request from USAID/Bangladesh

A key aspect of the ability of Bangladesh to compete in the international market for ITES is the attitude and perception of that market among market participants. The study conducted a survey to determine the opinions of some key public and private stakeholders in this market.

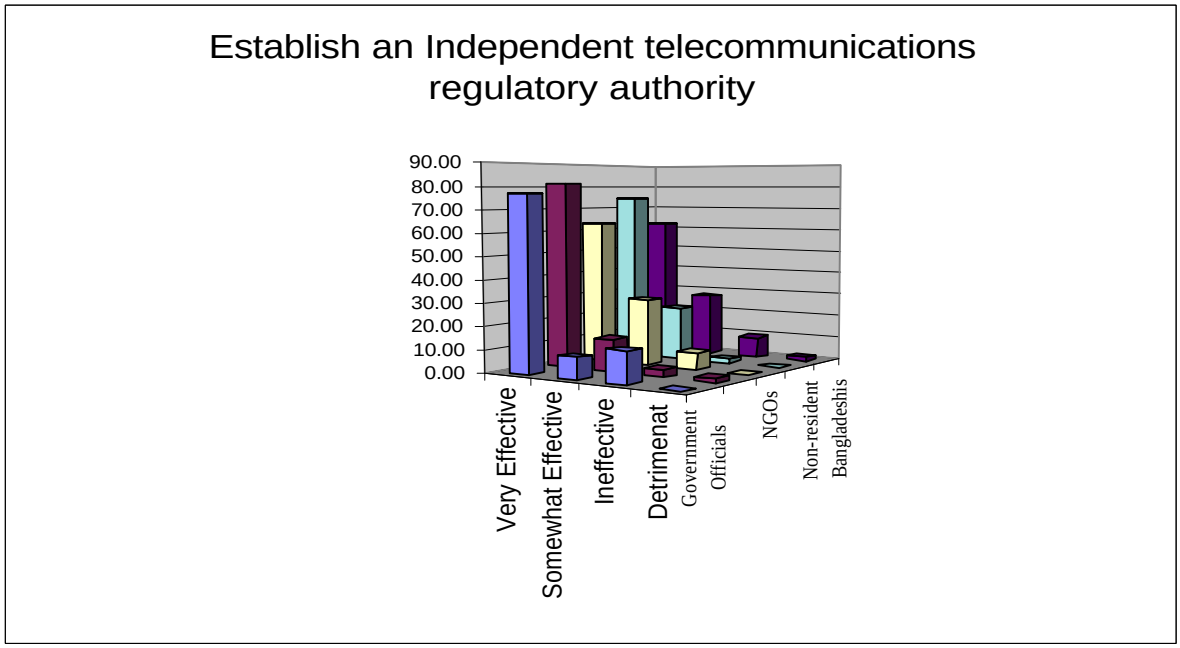
Among the issues considered by the survey were opinions on:

- The ability of Bangladesh to compete in this market.
- The role that government can play in promoting this sector.
- The role of the private sector in developing this sector as an export market.
- The possible role of Nonresident Bangladeshis in generating business in ITES.
- The status of enabling conditions in Bangladesh and its competitiveness with India.

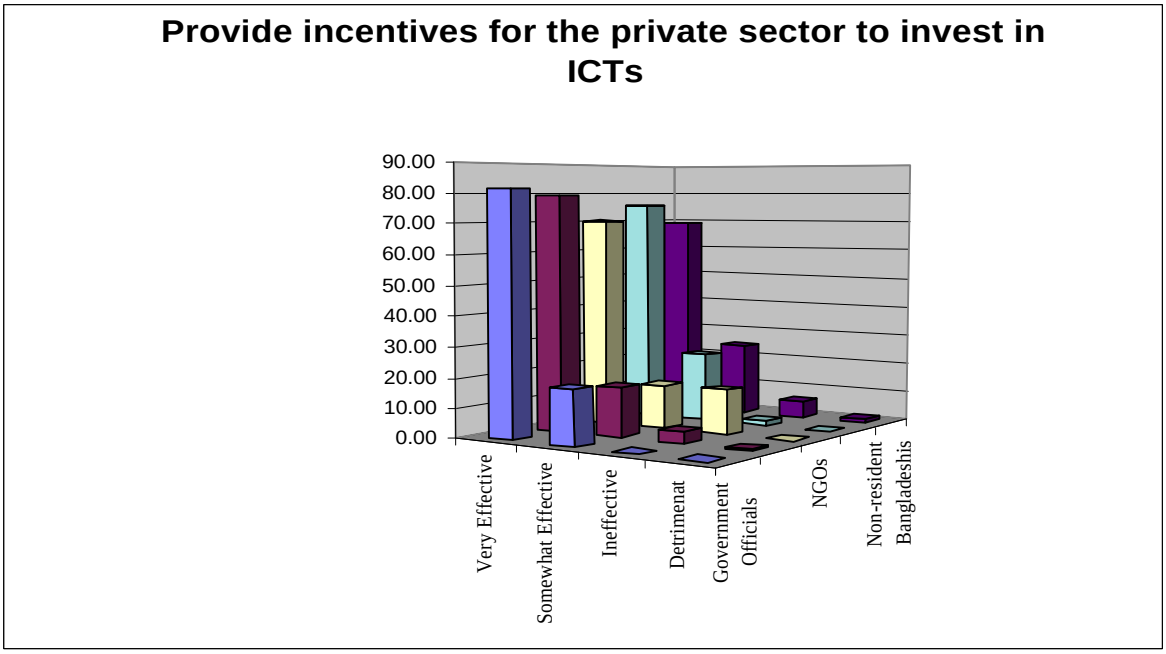
The survey sample was quite large, and covered several classes of stakeholders in Bangladesh, as well as a group of Nonresident Bangladeshis. The sample size was:

- 42 Government officials.
- 194 executives and decision makers in ICT firms and ICT trade associations.
- 27 in NGOs, including business associations, development organizations, social service organizations, and others.
- 204 executives in non ICT firms and trade associations, including banking, legal, health, education, agribusiness, media, insurance, garment and textiles, transportation and others.
- 219 Nonresident Bangladeshis, who were recruited through several Bangladesh expatriate organizations, primarily in the U.S.

The survey revealed a high degree of consistency among the different classes of stakeholders. Almost the entire sample was in favor of greater liberalization of the telecommunications sector, and of privatization of the BTTB. There is strong support as well for an independent telecommunications regulatory authority:

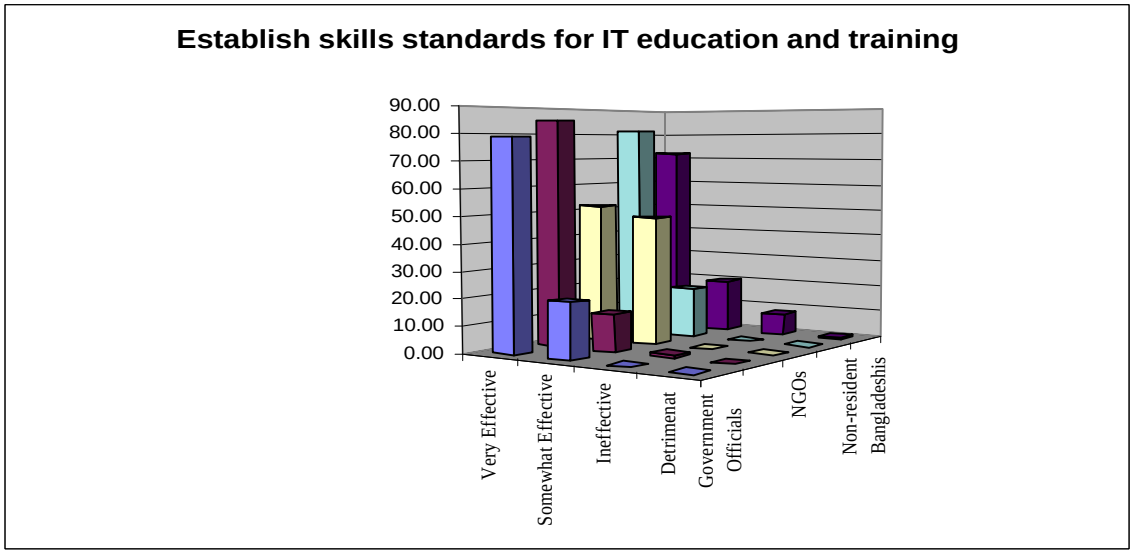


An important result highlighted in the survey was that almost all the groups believed that encouraging investment in information and communication technology was a very effective method of developing this market. This highlights a general opinion among the sample that Bangladesh is disadvantaged in this sector by the lack of a good communications technology infrastructure.



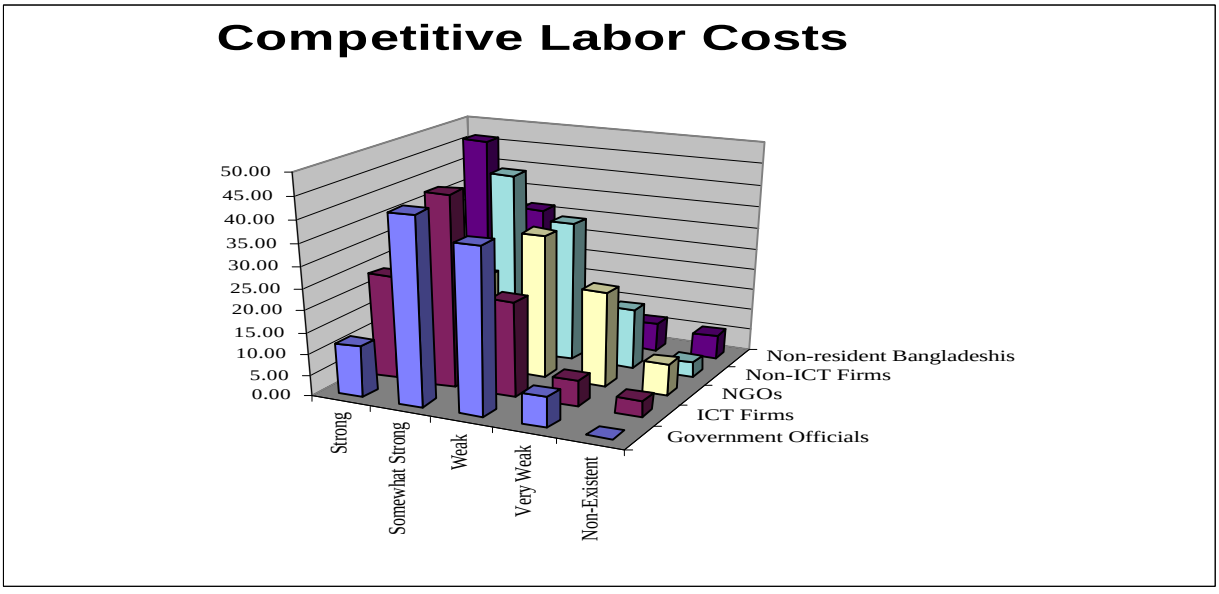
In addition to the support for private investment, there was also strong support for advances in education and training. Among the most popular was the establishment of skill standards for IT

education. The need for better standardization of skills in the industry was a common theme throughout the study.



One area in which most stakeholders had serious doubts was in the ability of Bangladesh to compete in this market against India. India has a significant head start over Bangladesh in all sectors of the international IT market, and most observers thought this gave them a major advantage.

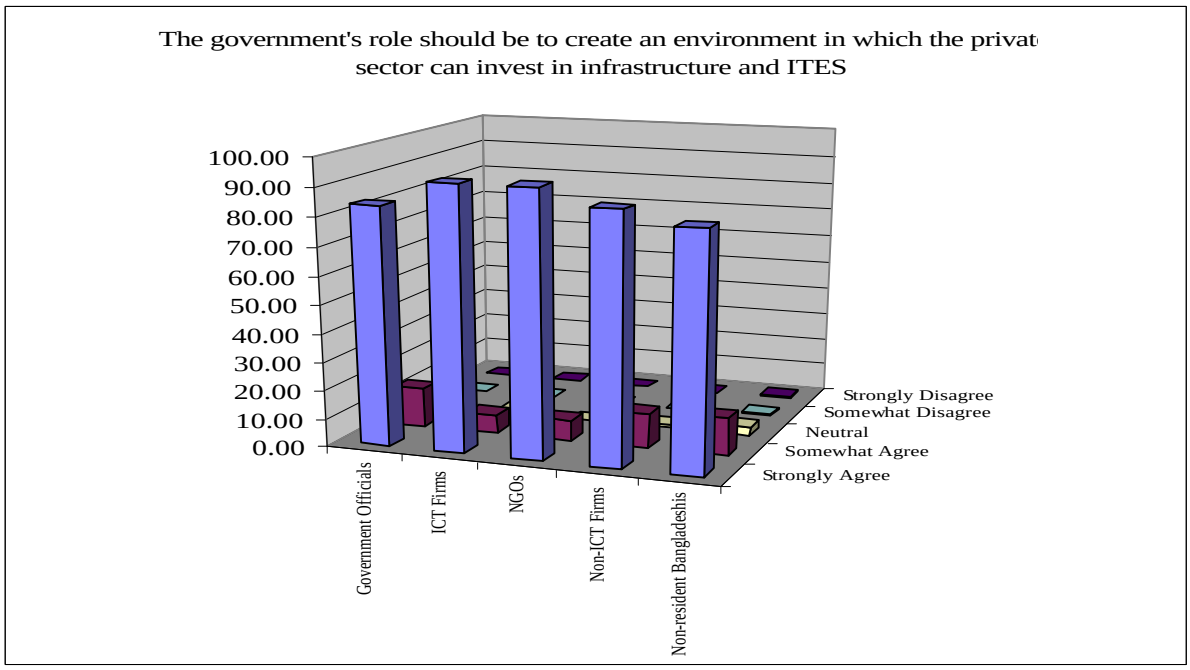
Low labor costs was about the only category in which the Bangladesh stakeholders felt that the country could compete currently with India:



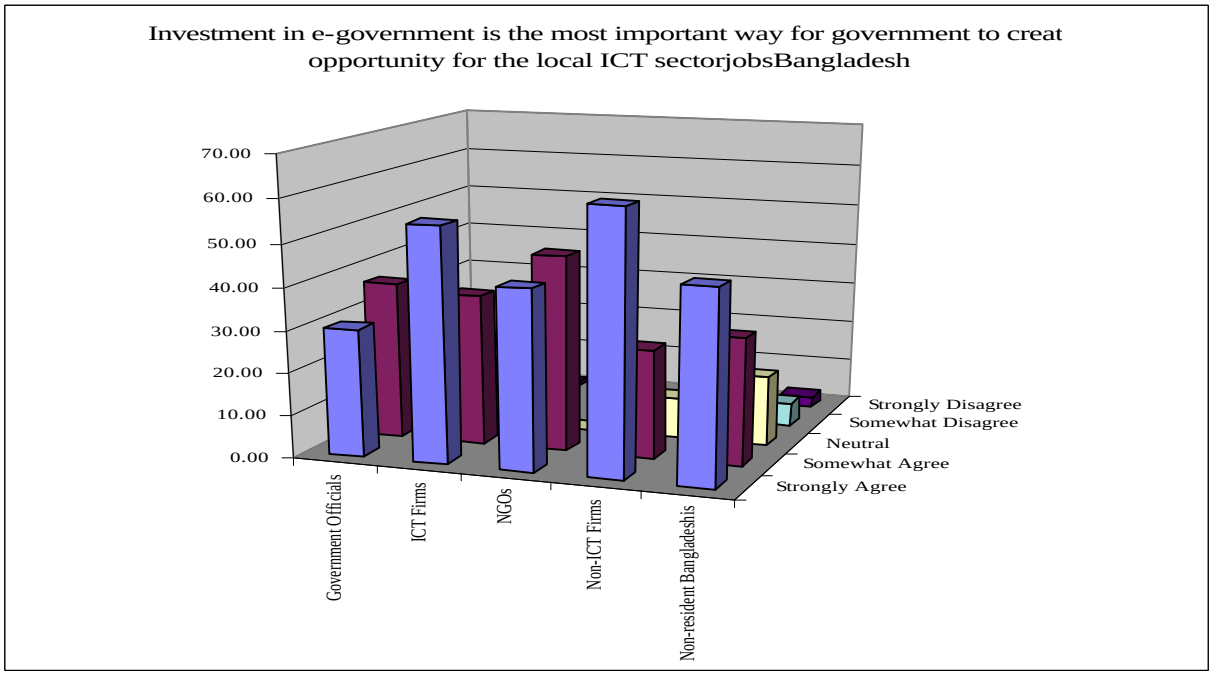
In almost all other aspects of the market, Bangladesh was considered disadvantaged. Specifically, Bangladesh was considered weak compared to India in:

- Private and Academic connections
- Domestic demand
- English language
- Image in ICT industry
- Quality and certification of labor
- IPR, security, authentication
- Outsourcing relationships
- Telecom infrastructure
- Venture capital
- Political stability
- R&D spending, cutting edge technology
- Marketing capacity, market research

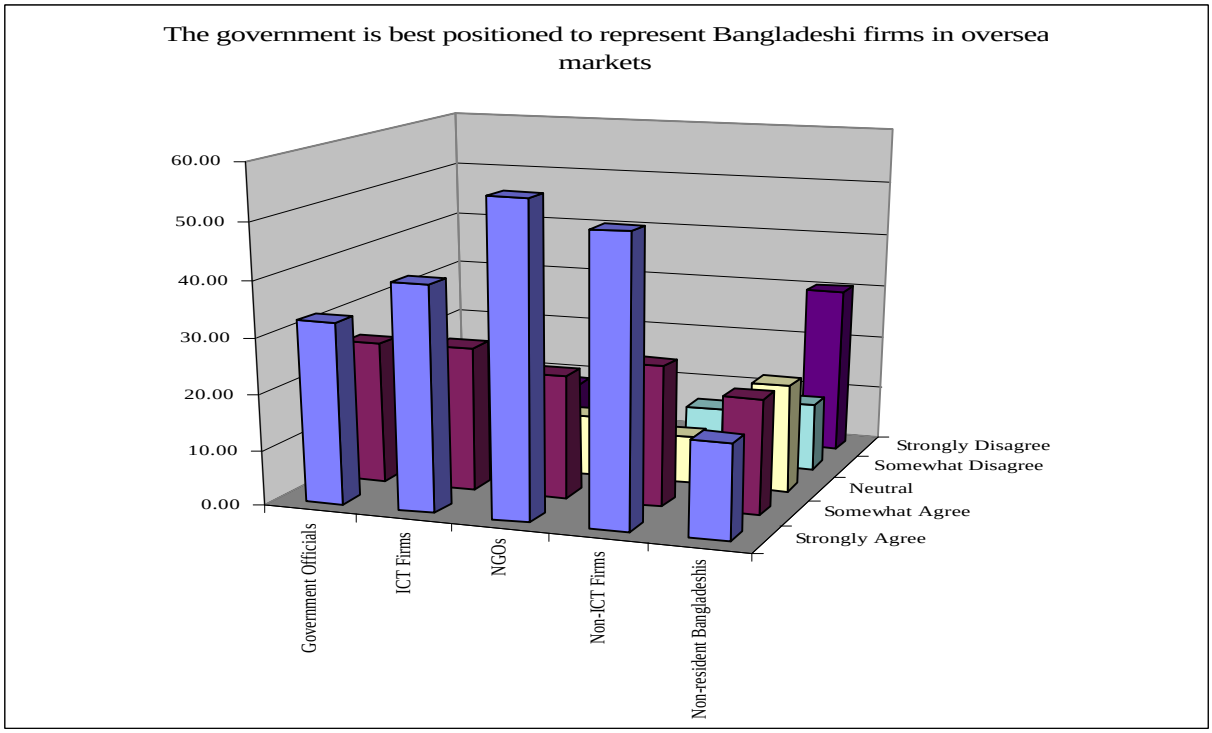
Virtually all stakeholders felt that the government should play a major role in the development of an ITES sector. That role, almost unanimously, was felt to be the creation of an environment in which the private sector can invest in the infrastructure needed to develop the sector.



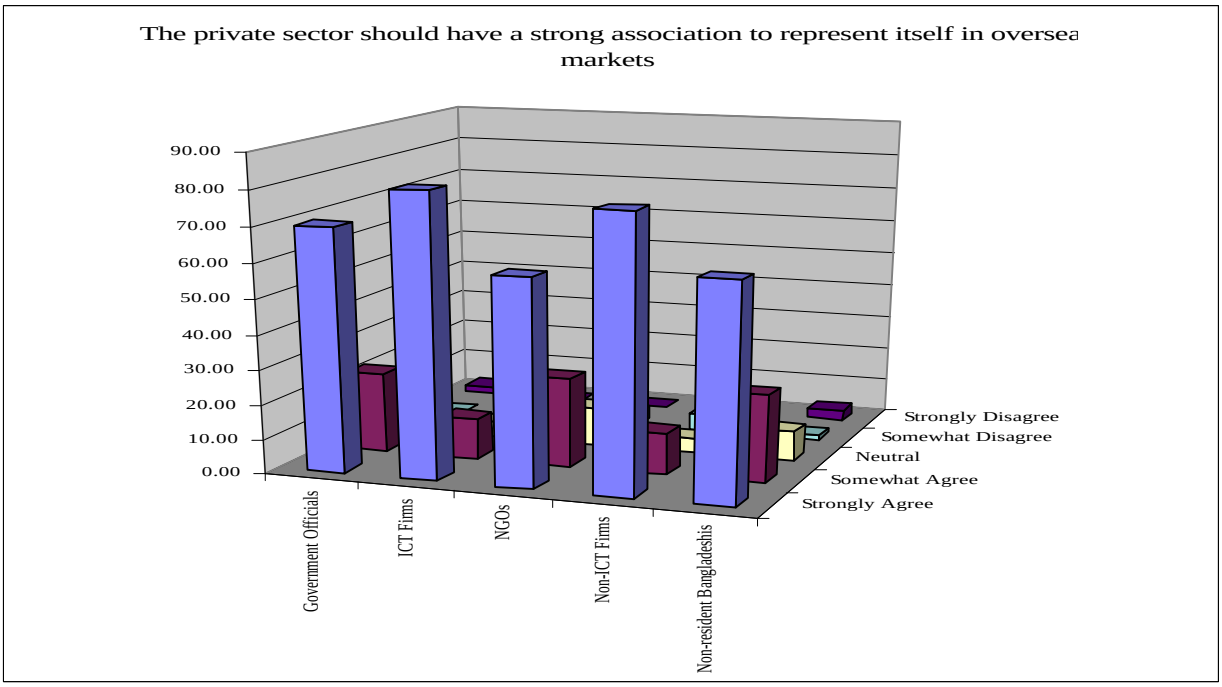
An additional way in which government can support the ITES sector is to generate demand for these services domestically by investing in e-government initiatives. There was support for this activity among the survey. It is noteworthy that the least support for e-government came from the government officials, who presumably would be required to manage its creation.



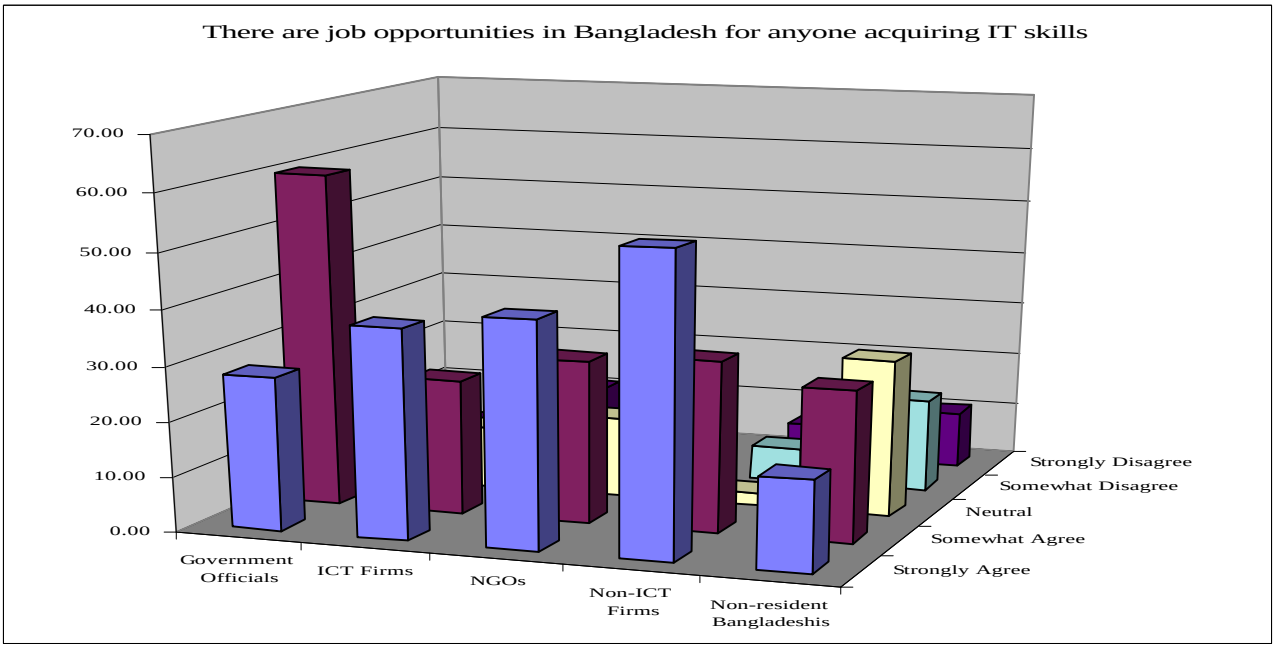
There was less support, but still a majority of stakeholders, who felt that the government should be a key proponent of Bangladesh firms in the international markets. Even though there was support for government efforts, there was less confidence in using the Export Promotion Board as the main vehicle for government promotion, as it was not considered very effective.



Even though all groups supported government involvement in promoting Bangladesh industry, they also felt that the private sector should be involved with a strong association if its own. ICT firms in particular felt that an association was crucial.



One aspect of the survey results seemed at variance to other evidence. Interviews with employers indicate that there are an abundance of qualified job applicants for each technical position they advertise. Nevertheless, most survey participants indicated that jobs were available for qualified individuals. Not surprisingly, the nonresident Bangladeshis were least convinced of job opportunities within Bangladesh.



The Role of Non-Resident Bangladeshis

Because anecdotal evidence indicates that Non-Resident Indians played a large part in the development of the Indian IT industry, an analysis of Non-Resident Bangladeshis (NRBs) was included in this study. Moreover, the NRBs are considered good information sources for providing another perspective of the external market given their knowledge of the Bangladesh situation and overseas business practices.

To determine the role of NRBs, a survey was conducted online, with requests for participation issued via the Association of American Bangladeshi Architects & Engineers (AABEA), eb2000, TechBangla, and e-Mela. A total of 219 NRBs completed the survey. The majority were based in the United States, in the IT and/or engineering profession, and have spent more than 5 years away from Bangladesh.

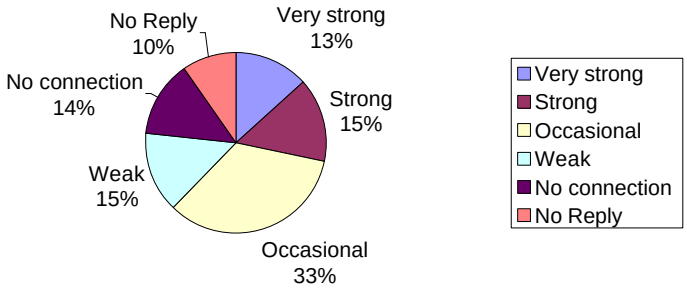
The survey revealed that the NRBs do not play the role in Bangladesh that the Non-Resident Indians are reputed to play. Major finding include:

- NRB community is loose-knit. Although there are significant numbers of NRBs that stay in touch with each other and with the business community in Bangladesh, majority have only occasional connection with either community.
- Harder view of Bangladesh as a competitor in IT and ITES, given their exposure to business environments in North America, Europe and Asia Pacific.
- Believes low labor cost is competitive advantage.
- Strong opinions that the government has not fostered business-friendly environment with its control over infrastructure and levels of corruption.
- Can play major role, specifically in knowledge transfer and marketing.

- Investment is not a major contribution NRBs can make at this time.

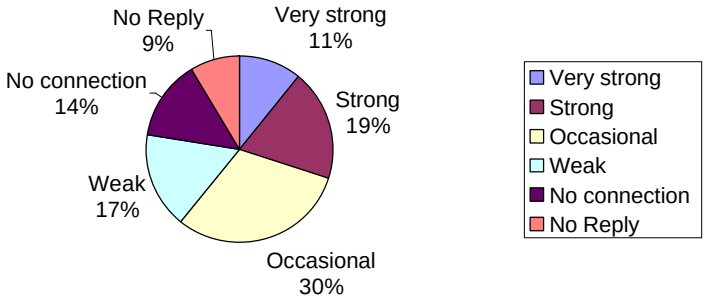
Most respondents, 69%, have been away from Bangladesh for over 5 years. Although a sizable 28% have either "strong" or "very strong" connections with other NRBs, majority of survey respondents had limited or occasional ties with Bangladeshi business community outside of Bangladesh.

How strong is your connection (involvement, communication, networking) with the Bangladeshi business community outside of Bangladesh?



The majorities also have limited connection with business community within Bangladesh, although 30% consider their connection "very strong" or "strong".

How strong is your connection with the Bangladeshi business community within Bangladesh?



The result is that the majority are also not currently doing business in the country, nor facilitating business exchanges between Bangladesh and the United States.

	Yes	No	No Reply
Do you do business in Bangladesh?	20.55%	70.78%	8.68%
Are you familiar with trends in ITES in Bangladesh?	56.16%	35.16%	8.68%
Have you played a role in developing business ties between the US and Bangladesh?	26.03%	65.30%	8.68%

NRBs already doing business with more developed countries (U.S., U.K., Australia, Singapore, Japan) have mostly negative perceptions regarding Bangladesh's competitiveness. Most common responses outlined the following problems with doing business in Bangladesh:

- Government
  - Rampant corruption and bureaucracy
  - Lack of knowledge, understanding and support for IT
  - Unfriendly business practices, both for entrepreneurs and foreign companies
  - Political instability; intolerance between political parties; hartals or strikes damaging to country's operations and reputation
  - No partnership between public and private sectors
  - No evident influential leader to initiate and support IT efforts
- Infrastructure
  - Costly and inadequate telecommunications
  - Power supply not reliable
- Human resources
  - Can't meet quality standards of the developing world
  - Poor or declining English capabilities
  - Lack of understanding of IT benefits, so hesitation to implement IT programs in business
  - Lack of commitment; lack of knowledge of western business practices
- Financial systems
  - Not developed to support IT projects
  - Lack of foreign investment

Resoundingly, low labor costs were considered Bangladesh's chief, and sometimes only, competitive advantage. Motivated entrepreneurs and a hardworking labor force were also mentioned as advantages.

The competitive disadvantages of Bangladesh were more numerous:

- Government
  - Lack of open market policies, thinking; anti-competitive practices and too much intervention on business and industry
  - Lack of vision regarding IT since lack knowledge
- Human resources

    - Lack of mid- and senior-level expertise
    - Low efficiency compared to other countries, expectations of outside customers
- Investment
    - Absence of foreign, recognizable companies
    - Small domestic market limits trained and skilled IT professionals
- Poor country image
    - Known as disaster area, low value-added exports (e.g., garments)
    - Lack of marketing, awareness
    - Lack of knowledge of overseas customer expectations

NRBs also do business in several other countries, including the United States and Canada; United Kingdom and Europe; Australia, Japan, China, Thailand, Malaysia and Singapore; Kuwait, Saudi Arabia; India and Pakistan. In making international comparisons, the NRBs were quite harsh:

- "No comparison; can't compare" – Bangladesh is "100 years behind"
- Infrastructure, especially for the internet, is superior overseas
- Business practices – high productivity; market-driven and profit-oriented policies and practices
- Little bureaucracy and red tape; government is pro-business and promotes entrepreneurship

However, those that work in South Asia, Africa and the Middle East stated that Bangladesh demonstrates similar technologies and business practices than these areas – with the exception of India:

- India: far ahead; more tuned with external market and customer expectations
- Pakistan: similar problems as Bangladesh with regards to infrastructure and government, although there are already overall improvements in business environment (not specified)
- Africa and Middle East: business practices, infrastructure and technology are similar to Bangladesh

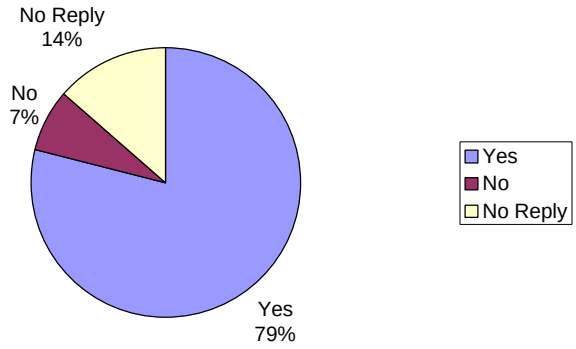
In discussing the potential for ITES exports from Bangladesh, many of the NRBs admitted a lack of knowledge in this area, but there were responses from most respondents:

- Software development
    - Quality assurance
    - Smaller-scale applications or software modules
    - Projects must be well-documented for offshore development
- Data entry
    - Documentation data entry
    - Back office processing
    - Bill preparation, accounting
- Digitizing and conversion
    - CAD CAM, assisted conversion
    - Blueprints
    - GIS

- Web development
- Database management
- Transcriptions
- Call centers, specifically for IT-related, hardware or technical support

NRBs express a willingness to help Bangladesh businesses to develop an ITES export sector, as can be seen below.

If a "match-making" program were launched for NRBs to promote Bangladeshi firms to provide services for companies in the United States or Europe, would you agree to serve as "matchmaker"?



The NRBs would generally expect to be compensated for this service. For the question: *What would you expect as compensation for serving as matchmaker? Check up to two that apply.*
The following were the top responses, in order:

- Recognition from company, organizations, Bangladesh government, agencies (45.2%)
- Commission or Revenue share as % of business deal (39.7%)
- Finder's fee; flat fee (17.8%)
- No compensation necessary (15.9%)

NRBs were equally harsh, if not more so, in judging the government role in this sector. Responses reflect what NRBs find lacking in government policies and practices to promote the IT and ITES sectors. In addition to the list below, many respondents added that the government "should stay out of the way of businesses and entrepreneurs" – i.e., once the infrastructure and logistics are resolved by the government, market forces should be allowed to take over unobstructed.

- Infrastructure, logistics
    - Dismantle BTTB
    - Truly liberalize telecommunications – implement an independent regulatory commission
- General business climate
    - Promote political stability, peace and order
    - Adopt business-friendly policies that promote foreign direct investment

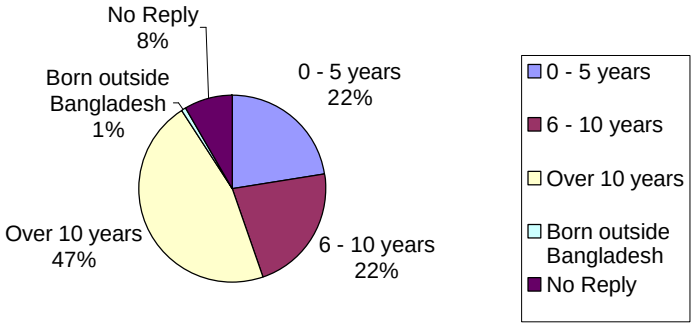
    - Increase transparency; reduce corruption
    - Offer tax breaks and incentives for local businesses, foreign investors
    - Implement IPR policies
- Marketing
    - Establish U.S. trade promotion office, in conjunction with IT trade associations
- E-governance
    - Implement IT projects with preference to local IT firms

The NRBs surveyed generally live in the US, and have been out of Bangladesh more than 6 years.

Geographic Location

- USA 64.8%
- Other 25.6%
- Dhaka 2.3%
- No reply 7.3%

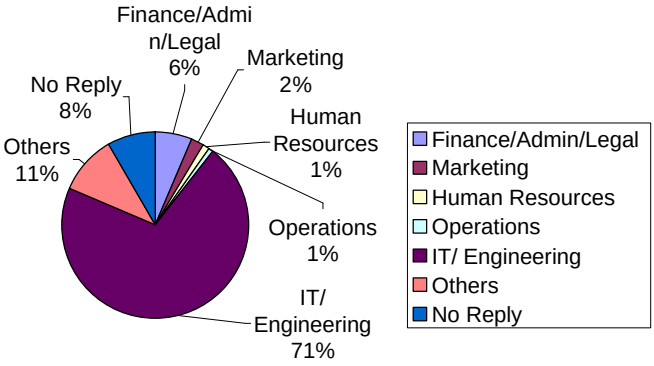
How many years since left Bangladesh



- Industry

ITES	65.3%
Non-ITES	26.0%
No reply	8.7%

- Profession



Annex D: Summary of the Philippines Case Study

General

This report provides an additional external perspective to the IT-Enabled Services industry by illustrating the competitive position of the Philippines, a country gaining recognition as a "Supplier Country of Choice" in this market. The objective of the study is to glean possible strategic and tactical concepts and practices that could apply to Bangladesh and its goal to increase its potential in this market.

Major Findings

The Philippines consistently lags behind its Asian neighbors in development, with long-running problems such as overpopulation, political instability and natural disasters. In recent years, however, due to major reforms in its telecommunications infrastructure, the Information Technology and IT-Enabled Services sectors of the economy have demonstrated noticeable growth.

With declining telecommunications costs and the country's inherent strengths in its English-speaking and service-oriented labor force, the country recognized its competitive potential in serving the American and English-speaking market for outsourcing. Based on an articulated strategy by the IT and E-Commerce Council (ITECC), a partnership organization composed of public and private sector representatives, the Philippines began to focus on its unique advantages and to target specific ITES segments in which to compete. While still facing internal risks and threats from other countries vying for market share, the Philippines has demonstrated organization and strategy from which to work towards its goals of creating higher-value jobs and increasing exports.

Why the Philippines for ITES Competitiveness Study

As recently stated in the Asian Wall Street Journal, "It is not often that the Philippines and the notion of competitiveness appear in the same sentence."[11] The article goes on to state that the country has recently caught the attention of major companies around the world as a supplier of IT-Enabled Services (ITES). Competitor countries like India are taking notice as well.

As the subject of competitor country research, the Philippines became a logical choice among others because of its recent advances in key areas that foster its emerging ITES industry. While India has held a commanding lead for years, the Philippines is only now showing its capabilities in various areas of ITES – and has been actively promoting its unique competitive advantages to the international market. Its emerging

	Bangladesh	Philippines
Population	131.3M	82.8M
Literacy	56%	95%
GDP per capita	$1,570	$3,800
% of population below poverty line	36%	41%
Labor force	64.1M	48.1M
Unemployment	35%	10%

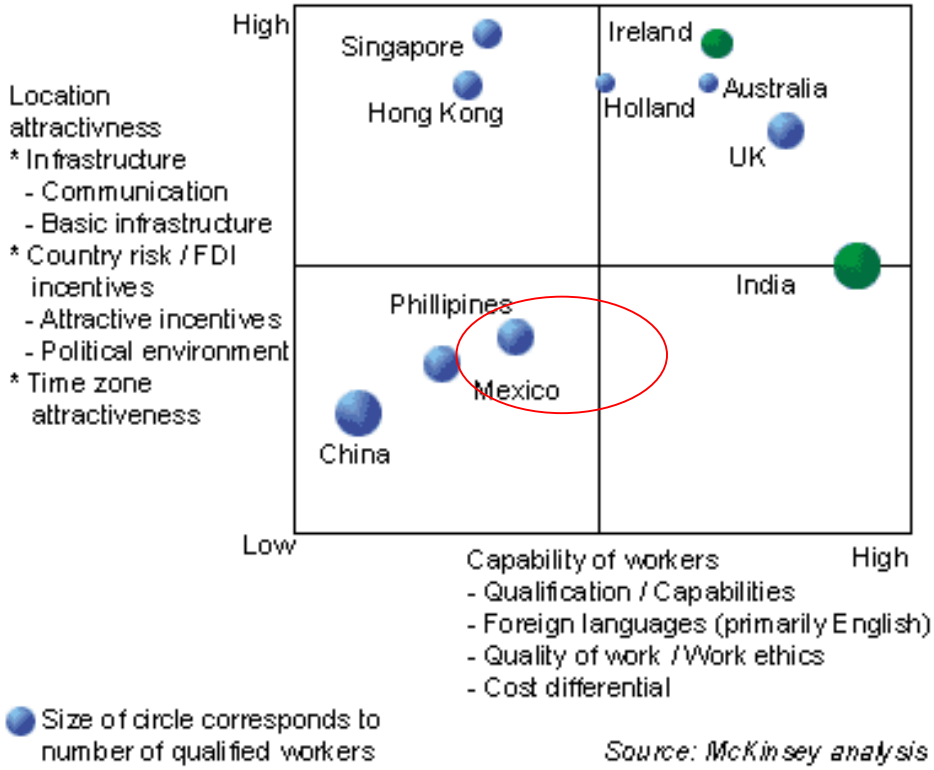
Source: CIA World Factbook 2001

[11] "The Philippine Advantage: On electronic services, Manila finally is doing something right," Michael Alan Hamlin, Asia Wall Street Journal, 20 March 2002.

position as a country supplier was deemed to be more relevant to Bangladesh's early efforts in establishing an ITES industry. Lastly, the Philippines shares with Bangladesh a few less favorable factors – including a poor country image, low GDP per capita, population density and unpredictable political shifts.

Country's Competitive Position in ITES

In NASSCOM/McKinsey's recent ITES study, the Philippines ranked low in both "Country Attractiveness" and "Capability of Workers":



If Bangladesh were included in the country comparison in this report[12], it would similarly be positioned in the lower left quadrant of this map, i.e. with low Country Attractiveness and low Capability of Workers.

Key Enabling Factors for ITES

The public and private sectors of the Philippines have made significant advances in creating a more favorable and optimal location for IT and IT-Enabled Services. These positive effects are

[12] NASSCOM McKinsey, "The India I.T. Advantage," December 1999. The country comparison matrix used here has subjective and arbitrary elements in deciding where countries are positioned along the axes. Additionally, there have been shifts in the country competitive landscape since 1999. It is used here as a guide and starting point for analysis, not as factual basis for considering country competitiveness. However, general conclusions from this matrix, i.e. the relative positions of the Philippines and Bangladesh as country suppliers, are considered relevant for illustrative purposes.

becoming more evident, in terms of increased employment and foreign investment, although the country is still in the early stages of finding its competitive niche in the market.

Infrastructure

Telecommunications Industry Reform

The telecommunications infrastructure in the Philippines had been controlled by a privately held monopoly operating as the Philippine Long Distance Telephone Company, founded in 1928. While majority-owned by the powerful Lopez family, PLDT had a small amount of shares traded publicly on the Philippine Stock Exchange, but nonetheless the monopoly over land lines and the international gateway was a tremendous challenge to the access and affordability of telephones in the country.

In 1993, then President Fidel Ramos embarked on a campaign to practice more open-market policies in heavy industries including the power grid, oil and gas, and telecommunications. He is widely recognized as having provided the political will to break the monopoly of the PLDT by issuing two Presidential Orders that greatly increased the availability of telephone lines:

- Executive Order 59: mandated interconnection between PLDT and other telecom operators
- Executive Order 109: increased the number of lines; any company applying for a telecommunications license must construct 300,000 international or 400,000 mobile lines within three years[13]

The effects of the telecommunications industry reform were seen soon after these mandates from the President. In addition, it is reported that significant foreign investment began to flow into the country after these policies were put into place, although a specific figure was not readily attributable to the reform.

Teledensity and Internet Use

Signs of liberalization of the telecommunications industry began to appear in the mid-to late 1990's, with increased competition, increased investment, and reduced rates.

The following table is from data supplied by the National Telecommunications Commission:

	1995	**2000**	**% Change**
Land Lines	1.4M	6.9M	393%
Teledensity – fixed lines	2.01	9.05	350%
Wireless	959k ('96)	6.5M	578%
Wireless density	1.37	8.46	517%
Internet users	100,000 ('97)	2,000,000	1,900%

[13] Philippine Institute for Developmental Studies, "Liberalization and Regional Integration: the Philippines' Strategy for Global Competitiveness"

The significant and rapid increase in teledensity, wireless density and internet use is clear evidence that the open-market policies of the Ramos administration quickly took hold. Once the government liberalized the telecommunications infrastructure, market forces stepped in to meet demand.

Competition and Service

Soon after liberalization reform, penetration and availability of telecommunications service increased in direct relation to the increase from the one provider, PLDT, to many more.

Operators	# In 2000
Local exchange carriers	77
International Gateway Facilities	11
Public Trunk Line Operators	10
Cellular Mobile Telephone Carriers	5
Satellite Services	13

Source: National Telecommunications Commission

It is important to note, however, that although there are numerous local exchange carriers, PLDT still controls 80% of the market.[14]

Another effect of increased providers and competition is the decline in prices over the period. In 2000, for example, the average cost of a T1 line[15] was reported to be $35,000 to $40,000 per month[16]. In 2002, this figure was quoted to be as low as $6,000 per month.[17] Moreover, service has become more responsive; a company can obtain a T1 line within two days of placing its order. Companies also have their choice of connectivity – whether by T1, microwave or coaxial cable. These increased options significantly assist a typical ITES company, where data operations redundancy could be critical to the business.

Human Capacity

Labor Force, Literacy and Skills

The Philippines possesses a large labor force of over 33 million people. The country chronically suffers from high unemployment rate, approximately 11%, and many are underemployed even as a large number of citizens seek work overseas.

The country has one of the highest literacy rates in Asia, 94.8%, as well as a high English language proficiency obtained by following an American-style public school system that teaches English in primary through secondary schools.

[14] Japanese Institute for Overseas Investment, "Telecommunications in Asia"
[15] Capacity of T1 = 64 kbps times 24
[16] Board of Investments publication, "Asia's IT Services Hub"
[17] Interview with Undersecretary of Board of Investments, Gregorio Domingo, March 2002

The country produces 350,000 college graduates annually, including a large number of graduates in engineering, accounting and medical-related fields. The number of graduates in IT related programs illustrate an exponential growth, from 4,000 in 1991 to over 21,000 in 1999.

International Benchmarks

The country's educational system, along with IT training institutes that have spawned nationwide, have begun to encourage measurement of IT programs and students against international standards. Specifically, the government, in conjunction with Japanese company partners, has sponsored voluntary testing of Philippine graduates in fields of IT and animation using the standards exercised in Japan. Early results show Filipinos lagging behind their Japanese counterparts, and educators and company managers are at least now aware of this gap in order to intervene.

For project management, private companies are encouraging employees to take the Singapore Project Management exam to assess their capabilities. IT training institutes are expected to be certified training vendors by the software or hardware developer (e.g. Oracle, Cisco), and to produce certified graduates as well. The University of the Philippines is also conducting its own study of how the UP curriculum and standards compare with North American counterparts.

The country has also been recognized recently by international groups for its skilled labor force. The Hong-Kong based Political & Economic Risk Consultancy (PERC) in 1999 ranked the Philippines second in its Skilled Labor Ranking, in terms of quality, cost and availability.[18]

"Cultural Affinity" with the USA

An unquantifiable attribute of the Filipino labor force is what has been termed its "cultural affinity" with the United States. As a former protectorate of the U.S. for over forty years, the Filipino culture is permeated with American attributes – such as language (including colloquialism), entertainment, and consumer goods and tastes. With this quality, the Philippine government and private sector has eyed the American market as its primary target for ITES business, and is determined to feature this affinity as a competitive advantage of the Philippines.

Concerns

The Philippines faces the usual challenges of a developing nation in terms of the lack of resources for educational facilities and faculty, and the desire of many graduates to leave the country in search of better opportunities elsewhere.

Assessment

With regards to the ITES industry, the Philippines has the following positive factors in its labor force:

- High literacy rate

[18] As quoted by the Board of Investments; the PERC report was not readily found after a search on the Internet

- High fluency in English
- Cultural affinity to North America
- Large population with good primary education

The country also faces the following constraints or limitations:

- Students and highly skilled workers want to leave
- Difficulty recruiting/retaining qualified faculty
- University level education under-funded
- Low supply of higher-level managers, e.g. project or relationship managers, necessary for higher value-added services

In relation to IT-Enabled Services, the most promising segments for the country given its current labor pool are the low- and mid-level segments of the industry. The country's leadership appears to recognize that it must increase the capabilities of IT and computer science graduates in order to participate in the higher end of the market. There are concerted efforts being done by the public and private sectors to bridge the gap identified by the international tests, although these programs are still under discussion at the time of writing.

Public & Private Sector Partnership: IT E-Commerce Council

During interviews with public and private sector stakeholders, many provided insight into the potential and contributions of the IT E-Commerce Council (ITECC). The organization combines the political muscle of government officials, with the expertise of the private sector. It should be noted, however, that (from interviews with stakeholders) there was wide agreement that the government was slow to react at first in focusing on the potential of IT and ITES. It was due to repeated requests from private sector IT organizations that finally gained the attention of government officials who eventually provided the political determination to get organized and formulate a strategic approach.

This section provides detailed discussion on this subject because the organization and early activities of the ITECC appear to demonstrate the committee members' understanding of the ITES industry, along with the competitive "drive" for the country to achieve its business goals.

ITECC Leadership and Organization

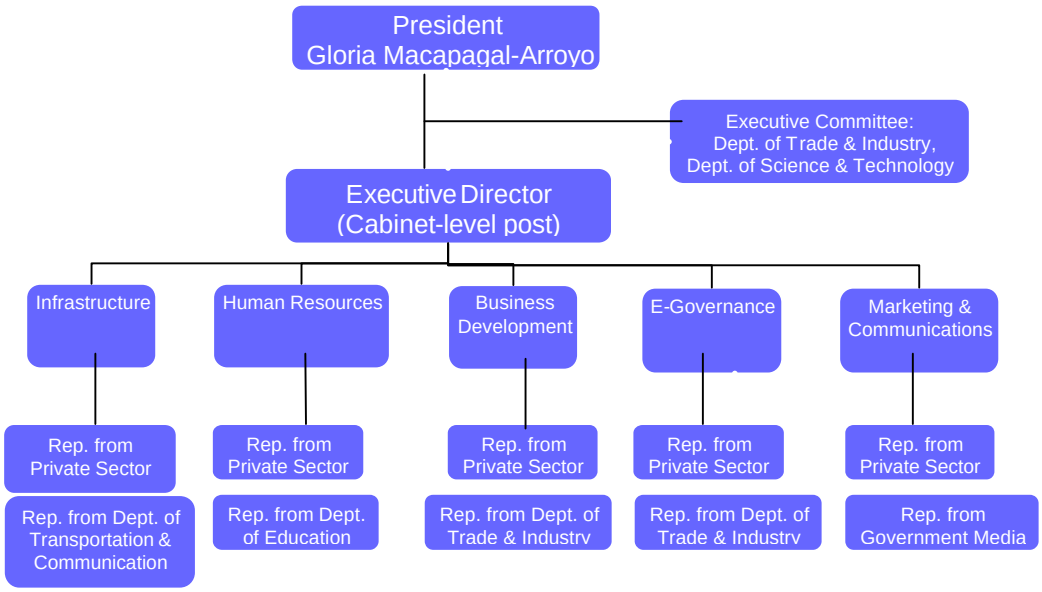
The ITECC falls under the Department of Trade and Industry, and is headed by an Executive Director who holds a Cabinet-level post under the President. The Committee is headed by the President Gloria Macapagal-Arroyo, who has been credited for her focus on the economy (she was an economist and former member of Congress). ITECC members report that she indeed chairs the committee's monthly (now quarterly) meetings, driving the agenda with her political promise to create over 100,000 high-value jobs by the end of 2002.[19]

The Executive Committee under the President is composed of the Secretaries of the Department of Trade & Industry (DTI) and the Department of Science & Technology (DST), plus the

[19] Interview with Executive Director, Virgilio Pena, March 2002

Executive Director. The Executive Committee is tasked with policy-making and planning for the rest of ITECC.

There are many working sub-committees, including Infrastructure, Human Resources, Business Development, e-Government, and Marketing and Communications. The sub-committees are each co-chaired with a government official and a volunteer member of the private sector. The Business Development Committee, for example, is co-chaired by the Undersecretary of the DTI and the Chief Information Officer of one of the largest Filipino-owned conglomerates in the country. The Human Resources Committee is co-chaired by the Department Chairman for Computer Science in the University of the Philippines school system and the founder of one of the largest chain of computer training schools. This arrangement, demonstrating a public and private sector partnership, appears to be working well for the ITECC in terms of aligning the goals of the public and private sectors organizationally.



ITECC Strategy Highlights

The ITECC wrote the "Internet Strategy of the Philippines" or ISP.com that outlines the general issues concerning the committee for promoting the IT and ITES industries in the country. As written on the Board of Investments website, the committee set out to develop focused market plan where Filipinos "can compete initially and immediately" in the ITES industry, specifically by maximizing inherent advantages of human resources.

In principle, the ITECC believes that the government's role is to provide support in infrastructure, labor, financial, logistical and legal/institutional means. However, development of the sector should be left to the private sector – that technology and markets are "inherently ungovernable" and best if "left to do its thing".

There are plans approved by Congress to create a new Department of Information, Communication & Technology under which the ITECC activities would fall. This move would

separate "Communications" from the current Department of Transportation & Communications, and demonstrates the government's perspective of ICT as a separate infrastructure backbone for the country. With its own budget and staff, the belief is that there would be an increase in ICT research and program capabilities. The intent is also to align under one department the objectives and activities for infrastructure, labor and policies for business development of ICT.

The Committee is admittedly still in its early organizational stages. Future activities for the ITECC are being developed into a written "management plan" (complete with objectives, tasks and delivery dates, and funding proposals for donor presentations) with the assistance of the USAID Mission in Manila, which is providing management consulting assistance to the Committee and Executive Director.

Selected Market Segments and Competitive Advantages

The ITECC recently developed its plan to concentrate on five specific segments in which it believed the Philippines could claim unique competitive advantages. The general criteria for choosing the segments were:

- Market potential
- Employment potential – job creation
- Supply of knowledge workers
- Unique competitive advantages of the country
    - Education – accounting, medical-related, art
    - English speaking proficiency
    - "Cultural affinity" with USA
- In addition to low costs ("Value for Money" – up to 50% savings), time difference

The selected segments are:

- Customer Contact/Call Centers
- Medical Transcriptions
- Animation
- Software Development
- Business Process Outsourcing (BPO) – specifically for financial services

Selected Segments

The following provides a general overview of what ITECC has published to be the targeted ITES segments in which the Philippines wants to compete and attract overseas customers. Note the unique competitive advantages provided, which appear to be the anchors of the ITECC's strategy. Of these segments, the Gartner Group has assessed the Call Center and Business Processing Outsourcing areas as particularly promising for the Philippines.[20]

[20] Based on interview with Josie Gonzalez, CITEM Director for IT and Electronics. Gartner's report due to be published May 2002.

Customer Contact/Call Centers

- Market size: $6.5 billion worldwide in 1998; projected $33 billion in 2008[21]
  - Philippines: $173 million in revenues for 2001
  - Projected growth to $864 million by 2004
- Employment
  - 22 call centers with 3,600 agent seats; employed 4800 in 2001
  - Projected growth to 24,000 jobs in 2004
- Unique competitive advantages
  - High English proficiency – written and spoken, even with American colloquialism
  - Culture inclined towards customer service
  - Familiarity with American customer
  - Decreasing telecommunications costs
- Companies: America OnLine, Customer Contact Center (C-Qube)

Medical Transcriptions

- Global market estimated at $10 to $25 billion annually; growth rate of 15%
  - Market expected to surge as 6,700 U.S. hospitals have yet to convert records as required
  - $40 million generated by Philippine MT firms in 2001
  - Projected revenues to $483 million in 2004
- Employment
  - 16 firms in 2001 – 4 have majority of market;
  - 1,200 professionals
- Supply of knowledge workers
  - Philippines is #1 exporter of nurses
  - 220 medical schools
  - Produces 44k nursing graduates per year; only 20% get jobs domestically
- Unique competitive advantages
  - High English proficiency – written and spoken
  - Familiarity with medical practices in the U.S.
- Companies: Radix Systems, Transkripsyo (see section 8.1)

Animation

- Worldwide market estimated at $1.3 billion in 1998; projected to grow to $15 billion by 2008[22]
  - Philippine-based companies generated $21 million in revenues in 2001; projected growth of 25% to $40 million in 2004
- Employment
  - 23 firms; # employees not found
- Unique competitive advantages
  - Strong cultural affinity with USA – American entertainment widely available

[21] NASSCOM McKinsey, "The Indian I.T. Strategy", 1999
[22] Robi Roncarelli, President, editor and publisher of PIXEL (animation magazine)

    - Creativity
- Companies: Walt Disney, Toei Japan

Software Development

- IT outsourcing for U.S. alone reached $56 billion in 2001; projected to grow to $100 billion by 2005[23]
    - Philippine software developers generated $115 million in revenues for 2001; likely understated due to unreported exports
    - Expect to grow to $268 million in 2004
- Employment
    - 36 registered software development houses
    - Estimated employees: HeadStrong 1,500 programmers; Fujitsu 2,000; Accenture 2,000
- Supply of Knowledge Workers
    - 21,245 graduates in IT and related programs in 2000[24]
- Unique competitive advantage
    - Developing wireless applications – good fit with Filipinos' avid use of mobile phones and SMS
- Encountering difficulty competing against India's lead and image

Business Process Outsourcing (BPO) – Financial Services

- Market size $20 to $25 billion (across industries) worldwide in 2002
    - Finance and accounting services expected to grow to $15 billion by 2008[25]
- Employment & Supply of Knowledge Workers – not found
- Unique competitive advantage
    - Filipino accounting system is similar to American Generally Accepted Accounting Principles (GAAP)
- Companies: Procter & Gamble, Barnes & Noble, Caltex, American Data Exchange (see sections 8.2 and 8.3)

Revenues and Projections for the Philippine ITES Industry

The Board of Investment estimates that the ITES industry produced $349 million in revenues in 2001 (approx. 1% of exports). Growth is projected to be at 68% annually, to an industry size of $1.65 billion in 2004. This figure amounts to about 18% of what India has projected for its ITES exports of $9 billion in revenues by 2004.[26]

[23] Outsourcing Institute, 2001 IT Outsourcing Index
[24] Board of Investments
[25] NASSCOM McKinsey
[26] NASSCOM McKinsey

Role of Government

Perceptions of Stakeholders

During interviews, key stakeholders from the public and private sectors were asked what they believed the appropriate role of the government should be in promoting the ITES industry. The following were the most common remarks on what the government could do:

- Provide opportunities for local firms for e-government projects
  - Currently, there is a government "E-procurement" project in progress (CIDA funded) that has been sent for bid to local IT development firms
  - The government has already collaborated with Filipino firms to develop online registration for DMV, passports, visas; these arrangements were made on a cost- and revenue-share basis
- Market the country and the ITES industry service providers
  - More about marketing is mentioned below
- Ensure affordable infrastructure, specifically telecommunications costs
  - Many of those interviewed responded that the "most significant contribution" made by the Philippine government to the industry is to liberalize the telecommunications market.

Marketing and Business Incentives

Marketing

The most visible effort of the ITECC and the Board of Investments in promoting the industry is through the BOI's Center for International Trade Expositions and Missions (CITEM; the CITEM director in charge of the IT sector serves on ITECC's Business Development sub-committee). CITEM has already sponsored two trade expositions in Manila, "e-Services Philippines", which reportedly was well attended by Filipino service providers (129 exhibitors) and other Filipino companies but not by international prospects. Despite the lack of attendance by overseas customers, CITEM believed the expositions served as an effective way to gather data about the industry. The Center is planning a more targeted approach to attract international outsourcing companies to visit Manila during these expositions, such as inviting companies that are planning to visit India for that country's planned ITES trade shows.

CITEM has also sponsored several trade missions to the USA, on a cost-share basis with Filipino-owned ITES companies. The agency acts as the marketing coordinator for these missions, working with the country's established export councils overseas to schedule these missions with prospective customers, and providing the appropriate marketing materials for promoting the country. In addition, CITEM facilitated the participation of ITES companies in the Offshore Outsourcing conference held in the United States in October 2001.

These missions were considered an effective means to create awareness for the Philippines ITES industry. No contracts were agreed upon during the missions; however, the trip generated

sufficient interest as evidenced by follow-up activities of companies inquiring about and scheduling investigative trips to the Philippines (particularly for call center vendors). Future trade missions are already scheduled for 2002, including the conference for the American Medical Transcription Association in Florida.

The CITEM budget was not discussed during the interview, but it was often stated by ITECC members that there is limited funding for these marketing programs. The costs of an overseas advertising campaign, for example, are prohibitive at this time.

Public Relations

The Board of Investments in 2002 commissioned the Gartner Group to produce a capabilities study of the ITES industry in the Philippines, at the cost of $60,000. The early results of the study (to be published May 2002) confirm the country's strengths in call centers and BPO. The study's costs were considered an effective investment considering the influence and reach of the Gartner Group, and the resulting positive outlook for two of the Philippines' target sectors.

Government Incentives

There are several notable government incentives that have facilitated the growth of local companies and foreign investment in the ITES industry:

- Philippine Export Processing Zones (PEZA) – IT Parks in the country are typically owned and operated by the private sector
- Other Incentives
  - Tax Holidays for 4 to 8 years
  - Tax and duty free importation of machinery, equipment
  - Simplified flow of goods
  - Additional deductions for training expenses
  - Employment of foreign nationals made easier

SWOT Analysis

As the Philippines determines its competitiveness as a provider of ITES to overseas customers, as well as the segments in which it chooses to compete, elements of its position as a supplier of services can be identified:

Strengths	Weaknesses
▪ Declining telecommunications costs ▪ Skilled, educated labor ▪ English proficiency, high level among nations ▪ Cultural affinity with USA ▪ Professional niches – medical-related fields, accounting, art ▪ Political will; partnership between public and private sectors – united message	▪ Country image ▪ Survey of executives of foreign MNC's doing business in the Philippines cite concerns ▪ Peace and Order: Abu Sayyaf (separatist insurgencies in the south) ▪ Corruption: increasing ▪ Political winds shift unpredictably ▪ Infrastructure (power, traffic conditions) ▪ Lack of funding for overseas marketing

Strengths	Weaknesses
▪ Successful ventures with overseas companies, MNC's – "Testimonials"	▪ Export-based enterprises (SME's) not enabled
Opportunities	**Threats**
▪ Target countries[27] o US and Canada o Japan o Singapore o Malaysia o Australia o Germany o UK ▪ Move up the value chain to remain competitive	▪ Other countries also vying for ITES o China, all segments – competing on cost o Vietnam (animation), Pakistan (software), Myanmar (BPO) o India – aggressively pursuing BPO ▪ Future supply of skilled labor – recognized need to keep workers competitive on global level ▪ Politics: Presidential elections in 2004 ▪ Foreign investment overshadows domestic – acknowledged trade-off to create jobs

Learnings for Bangladesh

While the Philippines appears to be gaining momentum in determining and strengthening its competitive position as a supplier of IT-Enabled Services, the country is still in the emerging stage of developing this industry sector and its export potential. The following summarizes the actions and results discussed in this report, which serve as possible action items for Bangladesh:

Action: Liberalize telecommunications industry
Results: Lowered costs, enabled IT industry; increased company competitiveness; increased foreign investment

Action: Focus on unique competitive advantages
Results: Differentiation from other competitor countries

Action: Government provides institutional support
Results: Open market policies encourage foreign investment; marketing the country as government's role

Action: Public and private sector partnership
Results: Aligned objectives and tactics; united message to market the country

While still behind and lesser-known than India, the Philippines offers several possible best practices to Bangladesh with its efforts to formulate, articulate and implement its strategies for becoming a "Supplier Country of Choice".

[27] CITEM